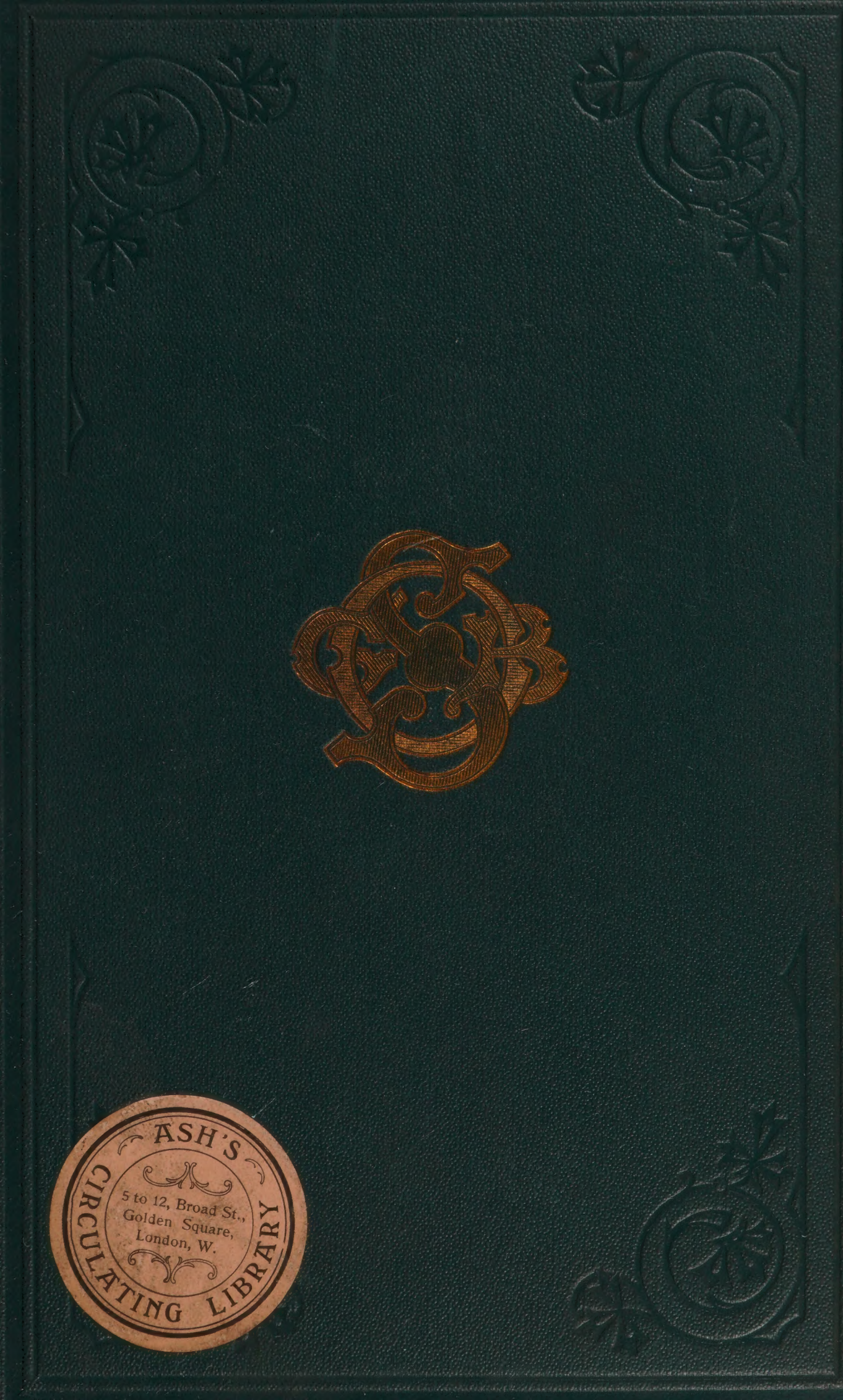
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OF THE

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OF

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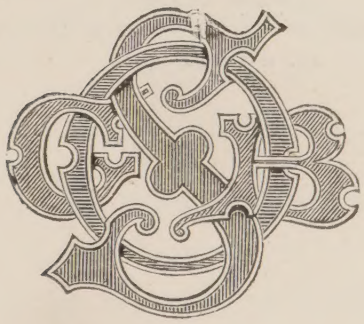

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1881.

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TRANSACTIONS

OF THE

Odontological Society of Great Britain.

VOL. XIII.—NEW SERIES.

Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING.

November 1st, 1880.

ALFRED WOODHOUSE, Esq., President, in the Chair.

On taking his seat, the President remarked that it was a great pleasure to him to be again surrounded by so many old friends, and to see them all looking so well. He judged from their appearance that they had been roaming in various directions in search of health. He hoped that they had returned with brains refreshed as well as bodies, and that an animated discussion would be the consequence.

The minutes of the previous Meeting were then read and confirmed.

The following gentlemen signed the Obligation Book, and were formally admitted to membership by the President.

George Lyddon, L.D.S.E., Forbury, Reading.

Lawrence Read, L.D.S.E., 21, Gower Street, W.C.

Hugh William Dewes, L.D.S. Eng., 10, Cavendish Place, W.

The President announced that the following gentlemen had been duly proposed, and would be balloted for at a subsequent meeting.

A. D. Alexander, L.D.S., Eng., 27, Gordon Street, Gordon Square, as a Resident Member.

Llewellyn Harding, L.D.S., Eng., Lorne Street, Manchester, and E. Brasseur, M.D. (Paris) Rue Mogador, Paris, Hon. Sec. of the Odontological Society of France, as Non-resident Members.

The following candidates were balloted for and elected members of the Society.

Gurnell E. Hammond, L.D.S., Eng., 43, Leinster Square, W.

Thos. S. Carter, L.D.S., Eng., 26, Park Square, Leeds.

Mr. S. J. Hutchinson showed a photograph of a picture now in the Royal Gallery at Dresden. It represented a surgeon or dentist of the period extracting a tooth, and was interesting from giving a clear representation of a pair of hawksbill molar forceps. He had previously believed that this particular form of instrument had been introduced within the last thirty years, but as this picture was painted by Gerhard Honthorst about the year 1600, it was clear that the hawksbill forceps was by no means a modern invention. He should be very pleased to present the photograph to the museum.

The President, after thanking Mr. Hutchinson for his present, remarked that members, if their attention was inclined that way, might often pick up during their vacation rambles things which would be an acquisition to the Society's Museum. He himself, when in Egypt, had tried hard to get a mummy's tooth with a gold stopping in it. He had seen it stated in books that such specimens had been met with, but he could not discover one. He suggested asking the Arabs to find him a skull, but a friend who was well acquainted with them, declared that they would manufacture anything that was required, and that although they would at once bring in teeth with gold fittings, the latter would not be ancient. He certainly did see one specimen which might easily have been mistaken for a gold stopping by an unpractised eye, but he assured himself by careful examination that the gold only consisted of a thin superficial layer, and had not been introduced into a cavity. The ancient Egyptians were in the habit of gilding the tongue of the corpse, and it would readily be imagined that some of this gold might become adherent to the teeth, and thus give an

unprofessional observer the idea that the gold had been used for stopping.

Mr. Chas. Tomes said that some years ago he met with this statement, and he took the trouble to trace it back from one author to another, in order to ascertain with whom the idea originated. He found that it originally appeared in a book written by Sir Gardiner Wilkinson, nearly forty years ago. He wrote to Sir Gardiner to ask him for his authority, and he answered that a Greek merchant who formerly resided at Thebes, but who was now deceased, had in his possession a molar tooth, stopped with gold. Sir Gardiner had not seen the specimen himself, but he had great confidence in his informant, and added that as it was a back tooth, it was unlikely that the gold had been used for decorative purposes. Still this was only hearsay evidence, and as it had never been clearly confirmed, he (Mr. Tomes) was not disposed to attach much importance to it.

Mr. Thos. Rogers said he also had tried to obtain a specimen, but did not succeed, and he had come to the conclusion that the statement could not be supported.

Mr. Coleman said he agreed with the President in his explanation of the teeth filled with gold, which were said to have been found in the mouths of mummies, a view he suggested many years ago in a paper read before the Society, and which had met with the approval of his friend, the late Mr. Bonomi. During a stay of several months in Egypt, some six years ago, he made this subject a matter for investigation, but he could find no person there who was any authority who had ever seen a mummy's tooth filled with gold. He saw several mummies, the faces of which had been gilded over, some of the gold being on the teeth; indeed one of the mummies' heads which he brought home with him, and which was presented to the museum by R. Waller, Bey, had when he received it from that gentleman some gilt about the face. Finney, Bey, had also for many years endeavoured to procure such a specimen, but did not believe it had ever existed. Mr. Bonomi, who spent

some seventeen years amongst the tombs of Thebes, and who was also associated there with Belzoni, never met with a tooth in a mummy filled either with gold or with any other material. On the other hand there was the statement of Sir Gardiner Wilkinson, to whom Mr. Bonomi wrote on his (Mr. Coleman's) behalf, and who stated in reply that he had seen a tooth filled with gold in a mummy at Thebes, whilst the fact that Herodotus spoke of the existence of both dentists and oculists as special practitioners amongst the ancient Egyptians, made the likelihood of the statement appear more probable.

Mr. Chas. Tomes then related a few particulars respecting some cases of abscess of the antrum which he had lately met with, and which were interesting on account of the almost complete absence of symptoms. The first was that of a gentleman who was going out to Zanzibar, and who came to Mr. Tomes to have some stumps extracted just before he left England. On removing the fangs of an upper molar about a couple of ounces of fœtid pus escaped from the antrum. In this case there had been no symptoms whatever pointing to the existence of an abscess.

In the second case there had been occasional slight discharge for about five years. The remarkable feature of this case was the rapid effect of treatment; notwithstanding the length of time it had existed, this abscess was cured in three weeks by syringing.

The third was that of a young man, aged 26, all of whose teeth appeared to be perfectly sound and good. He complained however of a nasty smell, and of an occasional bad taste in the morning; there was also some tenderness over the malar bone. Still nothing could be found amiss, until Mr. Betts discovered a small dimple between the canine and lateral, not far from the edge of the gum; on exploring with a fine probe, this was found to be the opening of a narrow and tortuous sinus leading into the antrum. This sinus was gradually dilated by pushing up ropes of wool until the cavity was reached, when a large quantity of offensive pus

was discharged. Still the most careful examination had failed to show any cause for the abscess; the result of the treatment also in this case had been unsatisfactory; although five months had elapsed since the pus was evacuated, the discharge continued, and the cavity showed no disposition to close.

Mr. Coleman said he had been greatly puzzled in trying to explain how it was that the treatment of abscess of the antrum was so uncertain in its results. He thought that probably the explanation was that the cases which were so readily cured, were not really cases of disease of the antrum, but cases in which abscesses had formed in the neighbourhood of the antrum, and had opened into that cavity. Cases of true abscess of the antrum, he believed to be very intractable. He knew of one which had been under treatment for ten years, and of four others in which its discharge had persisted for from three to five years. On the other hand he might mention the case of a medical student who came to him with symptoms of this affection. Mr. Coleman removed an upper molar tooth which was followed by the evacuation of a large quantity of pus, and told the young man to syringe out the antrum carefully every day, warning him at the same time that the cure would be slow. The patient went to his home in the country, and returned at the end of six or eight weeks quite cured. His father, who was a medical man, had recommended an injection of dilute phosphoric acid, and Mr. Coleman had since used this with great benefit in other cases. After opening the antrum he now always fitted a gold plate to which a small tube was attached entering the orifice; this enabled the patient, by closing the mouth and the nostril of the opposite side, to force fluid into the antrum and out at the open nostril without the necessity of using a syringe.

Mr. Storer Bennett then read notes of a case of necrosis of the superior maxilla, following alveolar abscess.

J. S., a healthy looking man, 50 years of age, came under my care at the Saint Marylebone General Dispensary on

June 25th of this year, complaining of pain and swelling in the roof of his mouth.

He stated that his occupation compelled him to travel about exposed to the effects of all weather, and that about a week before admission he got wet, and caught a severe cold and toothache; this was followed by swelling in the palate, puffiness under the left orbit, with pain, and for two days almost complete loss of sight in the left eye; vision was however nearly restored before he sought advice.

When I saw him, there was a little puffiness under the left orbit, and slight impairment of vision; the left cheek was also swollen.

He stated that he had suffered from syphilis 30 years ago, but not badly; and that he was always moderate in the use of stimulants.

On examination of his mouth, I detected two smooth swellings side by side in the left half of the palate, about the size of two small chesnuts. The tumour nearer the middle line presented a very peculiar appearance, closely resembling a piece of raw potato; it was tender on pressure, hard, and very slightly elastic. The other swelling was situated between the one just described and the alveolar border of the maxilla, was acutely sensitive, and fluctuated on pressure, evidently containing pus.

The front teeth in the upper jaw were all decayed down to the level of the gum; the left canine root was very painful and tender, and the gum much swollen, showing the presence of an alveolar abscess. When slight pressure was made on the root, the outer of the two lobes in the palate became more distended, so that the two were clearly connected.

I therefore extracted the root, when a profuse flow of fœtid pus immediately followed, and on pressing the outer tumour in the palate, pus flowed freely through the socket of the tooth, but no such effect followed on squeezing the inner lobe. On passing a probe up the socket, it could be felt to grate against a considerable surface of dead bone. The patient was therefore ordered Pil: Cal: Co. gr. X, that night, to have the socket syringed out every day with Condy's fluid,

and to use a mouth wash of chlorate of potash several times daily.

This treatment was continued until July 17th (one month from the commencement of the attack), when the sequestrum being loose, I made a free incision down to the bone along the alveolar border of the gum and extracted the sequestrum, which consists of a portion of the nasal and palatine processes of the left superior maxilla. The opening which remained was lightly stuffed with lint and allowed to granulate from the bottom. One or two spicula of dead bone came away subsequently, and the wound filled up in about three weeks, the swellings in the palate gradually disappearing.

Remarks.—I have ventured to bring this case before the notice of the Society, as I think it contains one or two points of interest, and first with regard to the diagnosis; it was quite clear that the patient was suffering from the effect of an alveolar abscess connected with the left upper canine, and that the pus had burrowed and was pointing in the palate, having made its way between the periosteum and the bone, hence the subsequent necrosis. And here I think the great difference lies between those cases of alveolar abscess pointing in the palate which are, and those which are not, followed by necrosis. For where the pus merely burrows between the periosteum and the mucous membrane covering it no very serious results follow, but where on the contrary, the pus burrows between the periosteum and bone, the vascular supply of the latter is necessarily cut off, and it perishes as a natural consequence.

The nature of the tumour nearer the middle line was not at first sight so evident; it was not affected by pressure either on the root or the sac of pus external to it, nor when manipulated did it fluctuate, but it felt like a solid mass; it was painful, but less so than its neighbour; its appearance (resembling a piece of raw potato) was very peculiar. There can, however, I think, be no doubt, judging from its subsequent disappearance, that it was merely the result of inflammatory effusion due to the irritation of dead bone in its vicinity, and the necessary inflammatory process for its separation.

That the necrosis was not due to syphilis I think is clear, the attack was too acute, and the recovery was complete practically without the use of mercury, which would hardly have been the case had the disease been of a specific origin.

Mr. Coleman showed for Mr. R. Waller, Bey, of Cairo, a model of the mouth of a young Dinka woman, showing the curious way in which they file their front teeth. The girl had become ashamed of this sign of barbarism, and wished Mr. Waller to extract the upper incisors and replace them by artificial, but as the teeth were perfectly sound and good he dissuaded her. Mr. Waller sent also a sketch of the patient showing the curious way in which they tattoo the face, and added that an account of this race of people would be found in Sir Samuel Baker's work on Central Africa, and also in Swienfurth's "Heart of Africa."

Mr. Coleman also read notes of a case of osseous degeneration of the pulp which had been sent to him by Mr. Waller.

The patient, a young Greek, 27 years of age, came to him in December last complaining of severe neuralgia affecting the left side of the face, ear and neck. His father, who was a medical man of repute in Cairo, had tried all remedies; he had also consulted various other doctors, but had never experienced any sensible relief. He came to Mr. Waller expressly to have the tooth out which he believed to be the cause of his suffering. The tooth indicated, the first left upper molar, was apparently quite sound, but was very sensitive on percussion. Mr. Waller extracted it, though reluctantly, and on splitting it open the pulp was found full of bony granulations. The pain ceased from that day, and the patient continued free during the next three or four months, but in April of this year the pain returned as bad as before, and he came to Mr. Waller begging him to extract the *second* left upper molar. This was done, and on crushing it the pulp was found in the same condition as that of the other tooth. The pain again ceased immediately, and as yet there had been no return, but Mr. Waller did not feel very hopeful about the case and asked whether nothing could be done to prevent a

recurrence in the other teeth; it seemed such a pity to have to extract such good and perfectly sound teeth.

Mr. Coleman said a curious case had occurred in a patient belonging to his colleague Mr. Langton. The patient had double hare lip and cleft palate, and just in the middle line of the upper jaw was an incisor tooth which appeared to be quite loose; indeed he thought it was attached only to the surrounding mucous membrane, but on seizing it with the forceps it did not come as easily as he expected, and he then found that it was attached to the loose intermaxillary bone. He had to pass his finger and thumb into the nostrils and hold the bone firmly whilst he extracted the tooth. It appeared to consist of the two central incisors geminated.

The Secretary then read a communication from Mr. H. W. Jackson, M.R.C.S., of Lewisham, on "Boils and Carbuncles apparently resulting from a Decayed Tooth."

Mr. Jackson stated that about 30 years ago, when residing in the country and before he entered the medical profession, he suffered from pain in the first right upper molar. He went to a chemist to have the tooth extracted, but he bungled the operation and removed only the crown. A large abscess followed which was allowed to open spontaneously; this never thoroughly healed, a small opening remaining, through which a few drops of pus exuded from time to time during the next fifteen years.

During the whole of this period he suffered with unpleasant frequency from boils about the right side of the face, especially about the lips, and on the right side and middle of the nape of the neck. Sometimes the appearance of boils was accompanied by uneasiness in the stump of the broken molar. Convinced at last of the connection between the two evils, he requested Mr. Stevenson of Wimpole Street to extract the stump. He removed two of the fangs and was under the impression that nothing more remained; but the fistula continued open and though usually quiescent, it sometimes discharged freely. A year or two afterwards Mr. Jackson suffered from a large carbuncle over the upper part

of the right scapula ; it was three inches in diameter and at the same time he had a dull aching pain in the neighbourhood of the remaining fang, which now projected above the gum. As soon as he was well enough, Mr. Jackson had this fang removed ; the fistula closed at once and the liability to boils and carbuncles ceased from that time, now nearly fifteen years ago.

Mr. Canton then read a communication from Mr. F. R. Lloyd, of Agra, on the value of the Teeth as an aid to the diagnosis of Cancerous affections of the gums.

The Teeth as an aid to Diagnosis in Cancerous Affections of the Gums.

Mr. President and Gentlemen,—I am not sure that the history of the following case which occurred some few years ago in the course of my practice, will prove either interesting or instructive to the Members of the Society, but as I do not remember to have heard or read of a parallel case I venture to give a short account of it taken from my professional note-book.

A few years ago the Civil Surgeon of a station in Northern India, asked me to inspect the mouth of a lady who was a patient of his, for the purpose of giving an opinion as a Dental Surgeon regarding an indurated tumour which he rather suspected to be of a malignant type. He had already consulted with a Dental practitioner, but as he had known me for some years, he wished to have my opinion also. On a day appointed, the lady was brought to me. She was about 40 years of age, and appeared to be in perfect health and of good physique.

I examined the oral cavity and found a tumour extending from the tuberosity of the superior maxilla on the right side to the first bicuspid on

the same side. It was exceedingly hard, and had imbedded the included teeth to such an extent that only a small portion of their crowns was visible above the mass. The first and second superior molars were missing. The Dens Sapientia had a very black and large sized amalgam stopping in it, which I should think was composed either of silver filings, Sullivan's, or some very inferior stopping. It appeared to have been in the tooth many years, judging from the excessive discoloration of the dentine and enamel. The tumour had filled up the space left by the missing teeth, and it bore the impression of the subjacent lower molars which closed accurately into its substance. Both the masseter and buccinator muscles were somewhat raised, and caused the face to appear fuller on the affected side. I asked the patient if she had ever felt sharp lancinating pain in the vicinity of the tumour ; she said "No," and seemed to treat the affair very lightly, not believing that there was anything serious the matter. From the hardness of the mass I was at first inclined to think that it was an *osseous cyst,* especially as there was an absence of the characteristic darting, stinging pain, which accompanies cancer, and I have seen several cases of schirrus which have attained a large size before manifesting decided symptoms of malignancy, thus destroying the only chance of a successful opera-

tion owing to the extensive ramifications of the roots of the cancer.

In the present case there was no purple appearance about the mucous membrane, nor were there any symptoms of ulceration. I had, however, clearly ascertained that the growth was increasing, and as the Civil Surgeon was very anxious about the correct diagnosis of the case, I suggested that the suspicious looking "Dens Sapientia" should be extracted at once, and that portions of the periosteum of the fangs should be scraped off and placed under the field of the microscope. In this he at once acquiesced, and the tooth was extracted and thrown into distilled water until all was ready for the examination. The medical man being a skilful microscopist, everything was done to ensure an accurate result and the tooth well cleansed. Within half-an-hour of the tooth being extracted, we had the melancholy satisfaction of distinctly seeing the nucleated cells so characteristic of cancerous disease. The diagnosis was so conclusive that the advisability of an early operation for the excision of the tumour was pointed out to the lady and her friends. As her husband wished the operation to be performed by a specialist in London, and her physician advised her taking a sea voyage, she accordingly went to England, and the tumour was successfully removed. I forget whose care she was placed under,

but it was either Sir W. Fergusson or Sir J. Paget, to the best of my recollection. However, the chief points of interest are, first, that the diagnosis was pronounced to be correct ; and second, that although several years have elapsed she is still living, and has had no return of the disease, and this satisfactory result is mainly attributable to the successful diagnosis of the case before it had time to establish itself.

I would, in conclusion, suggest that whenever teeth are found in proximity to suspicious tumours in the gums, it would be quite justifiable to sacrifice a tooth for the purpose of examination, in order to ascertain if any cancer cells are present in the periodontum.

Agra, East Indies.

Discussion.

Mr. Coleman remarked on the rare occurrence of malignant tumours connected with the teeth.

Mr. Dennant said he was surprised to hear Mr. Lloyd class "Sullivan's" amongst "inferior stoppings;" most of those present must have met with cases in which it had been in the mouth for many years, and had done excellent service. Another point which struck him during the reading of the case was that Mr. Lloyd appeared to be very certain about his discovery of cancer cells under the microscope. He (Mr. Dennant) had always understood that the identification of these cells by microscopic examination was by no means an easy matter, and that in very many cases the clinical evidences of malignancy were much more reliable than the microscopical.

The President then called upon the Secretary to read Dr. Arkovy's paper on Papilloma of the Oral Cavity.

On Papilloma of the Oral Cavity.

Mr. President and Gentlemen,—Cases of papilloma in the oral cavity are rare; the number which have been noted in literature is exceedingly limited. The authors who have written on the subject confine themselves to the histroy of the disease, and the *mac*roscopical account of the growth. The case which I am about to describe is remarkable on the one hand for its diagnostic interest, and on the other for exceptional localisation of the tumour. The number of cases indicated in the literature of papilloma is confined to a few only. One has been noticed by W. Fergusson (1862), two by James A. Salter (1866 and 1867). Besides these, R. Baume, of Berlin,* mentions that he had an opportunity of observing two similar cases; the latter of these, according to the description, would, however, seem to resolve itself in a curious form of gum-hypertrophy. All these cases have been observed on the upper jaw, with the exception of the case of Fergusson, where the tumour extended upon the right side of the lower jaw along the alveolar process. This case probably escaped the attention

* Robert Baume, Lehrbuch der Zahnheilkunde. Leipzig, 1877, p. 451.

of Baume, when he asserts that "its development is limited to the alveolar and palatal part of the upper jaw."

Fergusson in his case described in the *Lancet** (quoted by Salter),† says that he was in the highest degree surprised at the appearance of the nerve growth, which he had never seen before. "It looked like vegetable matter, or greatly elongated papillæ. He could not undertake to give it a name." The tumour of a pinkish-white colour lay upon the gum of the right lower jaw, the subject being a man eighty years old. The operation was performed without injury to the bone, but in consequence of the deficient extirpation, it returned in a fortnight, and was then scraped off together with a small piece of bone. There was no further relapse, and a sound cicatrix was left. When Salter subsequently examined the swelling, he found it composed of "a mass of papillæ, many of them nearly an inch long, and similar in shape to the filiform papillæ, . . . among these elongated processes were a few rounded eminences like fungiform papillæ." "I did not succeed," he says, "in making out the deeper structures of the papillæ," &c.

Mr. Salter's own cases are briefly the follow-

* *Lancet*, 6th September, 1862, p. 255.

† "Guy's Hospital Reports," 3rd Series, vol. xii, p. 358; and "Dental Pathology and Surgery," by S. James A. Salter, M.B., F.R.S., &c. London, 1874, p. 170, &c.

ing :—(1865), A man aged fifty-seven, four months after the removal of the first upper bicuspid of the right side, noticed a slight roughness and swelling on the side of the palate, extending from the inner alveolar border of the gum, where the extraction had been made, towards the vault of the palate, . . . there had never been any discharge or pain, or general swelling connected with the growth." The growth was the size of a split chesnut, the attached base being rather smaller than the extreme circumference of the tumour. . . . The tumour was creamy white, and the surrounding gum usual dark purple-red, the contrast was extreme, and the limits quite definite." After the operation, two small pieces of bone exfoliated, probably from the removal of the periosteum. The microscopical structure showed a "hard mass of fibrous tissue, surmounted by papillæ, and the latter being mainly composed of dense coherent epithelium." The case afterwards assumed a malignant form, and the patient died in 1872 exhausted, &c. Mr. Salter's second case occurred in a gentleman twenty-one years of age, who had warts also on his skin. Having a number of carious teeth, the wart-like growths reached the necks of the teeth, and grew into the cavities. "In structure they partook much of the nature of gum, folded into small tubercular elevations, looking like the head of a cauliflower. The ultimate

elements, as seen under a high magnifying power, *were the same as gum-structure.*" With appropriate treatment the patient recovered.

Comparing these three cases, we find the first two identical in nature, and precisely answering to true papilloma, while the third case seems to approach less in form than in structure gumpolypi or hypertrophy as described by Wedl.* A similar case has been observed by Baume (l.c.) in a lady fifty years of age, where from the use of a badly fitting upper set of teeth, a growth developed over the alveolar margin, it was one centm. in diameter and showed finger-like processes. He describes the case as "a peculiar papilloma." I think, probably, this term is not correct, inasmuch as the surface of the tumour is described as being smooth and presenting the shape of regular gum.

Now from these few cases we may see that papilloma of the oral cavity is not of daily occurrence. Partly from this circumstance, and partly from the inquiry into the microscopical composition of papilloma, I am induced to communicate an interesting case of true papilloma.

In the early part of March, 1877, a healthy girl, aged eighteen, called at the Dental Hospital (Leicester Square,) to have some decayed teeth

* Prof. Dr. C. Wedl, Pathologie der Zähne. Leipzig, 1870, p. 222 and Atlas, Fig. 118.

stopped. While examining the mouth, I noticed a growth on the soft palatinal arch, which, although it did not differ from the pink colour of the surrounding parts, was very remarkable for its warty surface, so much so, indeed, that I had never seen its like before. The growth extended 1 centm. over the margin of the left velum upon a short pedunculus. No predisposing cause could be discovered. There was never any discomfort caused by the growth, except on cutting it off with Cooper's scissors; the copious bleeding was stilled by nitrate of silver. When the patient returned after a few days, there was a solid eschara.

The size of the growth (see Fig. 1) after being stood in alcohol for $2\frac{1}{2}$ years, was 12 mm. broad, 4 mm. thick, and 3—4 mm. in the pedunculus. The diagnosis in that case was an easy matter: for the suspicion of infection (condyloma) was groundless; the growth was placed on the mucous membrane, and was pedunculated; it was flat, had the colour of the surrounding tissue, and on its surface a number of fili and fungiform elevations were to be seen: there could be no doubt that we had to deal with a papilloma. The most astonishing circumstance was, that it appeared on the soft palate. Indeed, it is commonly known, that the usual situation of a papilloma is the skin, the serosa, and mucosa. The investigations of

Klein* have proved that the papillæ on the mucous membrane of the oral cavity, occur in a far larger quantity on the gum than upon the hard palate, and the same relation, but in a more marked degree, exists between uvula and soft palate. Perhaps that is why I could find no mention of papillomata occurring in that situation.

If we now consider the possible ætiological movement, we may adopt Mr. Salter's opinion as well as Virchow's. The former is inclined to attribute the development of papillomata to irritation of the gum caused by carious teeth; nevertheless, we may also agree with Virchow,† who says that papillary growth was not only hypertrophy in the common sense, or an access of normal papillary development, but that every (tegumentary) surface is capable of producing papillæ on its own account, even on spots where there existed previously no papillæ at all. Other authors, for instance Rindfleisch,‡ &c., lay decided stress upon the corpus papillare as the breeding-place of papilloma.

As far as, in our case, we have to do with the papilloma, there, may be quoted Salter, Heath,

* E. Klein: Mundhohle; S. Stricker: Handbuch der Lehre von der Geweben. Leipzig, 1871.

† Rud. Virchow: Die Kranhaften Geschwülste. I Bd. Berlin, 1863, p 334.

‡ Ed. Rindfleisch: Lehrbuch der pathol. Gewebstehre. Leipzig, 1873. pp. 61, 260, &c.

Tomes, Wedl, Baume, and Per Tan Gentem Jarretson, who mention its occurrence in the oral cavity. In works of pathological anatomy and general surgery, we hardly find a word on papilloma of the mouth; although, as we have already seen, this subject is in no way destitute of interest.

* The microscopical texture shows (with Hartnack's obj. 7, oc. 2) in a longitudinal (Fig. 3), and transverse (Fig. 2) sections the minute illustration of our case; the whole demonstrates the appearance of an epithelial formation and a connective tissue is hardly to be discovered, the only trace of it is represented by the adventitia of blood-vessels. Viewing the texture from the periphery inwards, we see on the outermost surface some remnants of spared mucous membrane *a*, under this at *b*, a layer composed of sclerotic pavement-epithel forming round and oval circles, the inner wall of which is again occupied by two 3 circular piled-up rows of epithel cell groups *d*, and in the centre of all these expanded blood-vessels *e* may be seen. The sclerotic layer (*c*) follows the undulating features of the texture, exhibiting even in the same section several single papillæ and papillary offshoots. In transverse sections the groups look more separated, and give it a birdnest-like appearance. Here and there between such nests may be seen

* The illustration will appear in a future number of the Transactions.

a layer (*c*) of transitional cells. There is no trace of nerves.

It is evident from the sections, that the hyperplastic epithelial development is extending upon the ground of the corpus papillare, and that one common stock is producing in different directions papillary offshoots. Partly that form and the nest-like grouping on the other hand, are the constituent characteristic of papilloma on the mucous membrane of the oral cavity. It is true, that the histological conformation of epithelial cancer is hardly, if at all, different from the illustrated fact; it is also true that the degeneration of papilloma into epithelioma is not an uncommon event; but the surgeon will make the distinction.

The colour of the growth in our case was the same as the healthy surrounding tissue, and the creamy colour was not present. Salter, in his first quoted case calls the "creamy-white" colour a striking peculiarity; Fergusson's case seems to have been less malignant, the surface being pinkish-white. There the tumour degenerated in epithelioma, here the final end became unknown in consequence of death. The rest of the quoted cases, together with my present case, demonstrated in that respect no deviation, and in the latter the pedunculation was one proof more in behalf of benignity.

As to the differential diagnosis hypertrophy of

the gum is the subject which requires attention. It appears (after Wedl, o. c. p. 221, 223) upon the corpus papillare of the mucous membrane as well as upon the corium of the same; the first is more conspicuous on the buccal surface of the gum, it is limited to the territory of either one or several teeth, or is extended—in cases of general tooth-decay—over a large surface. The disease appears in form of small tubercles arranged into groups, giving the gums a velvety appearance. The single tubercles are provided with "papillæ covered by a stratum of manifold flat epithel, which becomes visible only after peeling off the epithel." "Sometimes the parenchyma of the papillæ is found to present a dirty brown colour, or to be scattered throughout with flat globules, the result of insufficient nutrition."

We find on comparing this histological description with that of papilloma, that while in gum-hypertrophy, the hyperplastic papillæ arise under the mucosa, isolated, side by side, separately, that on the contrary, in papilloma we find the fungi and filiform papillæ altogether arising from one common basis, with or without pedunculus, producing numerous offshoots and buttons, and piling up to exhibit one uniform growth, whose intimate structure, one may say, is exclusively composed of epithelial elements.

Concerning the nature of the papilloma, I think,

I might add to Mr. Salter's opinion, that although advanced age predisposed to cancerous degeneration—a positive diagnosis of tumour might sufficiently decide upon the benign or malignant nature.

The treatment consists of simple extirpation; and here I should like to suggest, that inasmuch as papilloma does not draw into the territory of the hyperplasia more than the submucosa, I think, the scraping off the periosteum, or still more, might be in most cases at least, unnecessary. Besides, as to the surgical part of our subject, I believe Fergusson's opinion is the best: "And we must look upon the present case more as an instance of the curiosities of pathology than of surgery."

* * * * *

In the winter of this year I had the opportunity of observing two cases, which may be mentioned here. The one happened to be a papilloma also on the soft palate, only somewhat higher situated, and smaller in size than described. The patient was a physician, æt. thirty-six. The other occurred to a lady about forty. On the right side of the lower jaw, and upon the gum between the first molar and bicuspids, there was a small territory about the circumference of a farthing, which was covered by a number of papillæ; they had the appearance of small hyperplastic taps 1–2 mm. in length, and were scat-

tered over that place quite independent—viz. isolated from one another. In colour they did not differ from the gum. I do not remember to have seen any warts on the skin of this patient.

I think the whole appearance of these hyperplastic papillæ differing in form—but not in structure—from papilloma, would have a fitter name if one could call it verrucosis.

Discussion.

The President said that as he had never met with a case of this rare disease in the course of his practice, he could not add anything to the description given of it in Dr. Arkovy's carefully written paper. But Mr. Charles White had been more fortunate, and he had been kind enough to bring a section of the growth, in order to show its microscopic structure. He would therefore ask Mr. White to describe his specimen.

Mr. Charles White said he had brought the specimen because he thought it would illustrate and supplement Dr. Arkovy's paper. The patient from whom it was taken was an American lady, who came to him about five years ago on account of a pedunculated growth attached to the gum between the first and second upper bicuspids on the right side. It was smooth on the surface and of a pink colour, rather paler than the surrounding mucous membrane. He tied a ligature round the peduncle and then snipped off the growth. It measured half an inch long, by a quarter of an inch in diameter. He put it into alcohol, stained it with logwood, and then cut some sections. It would be seen that the whole of the outer surface was made up of enlarged papillæ, though these were not apparent when the tumour was in the mouth. He considered that the tumour was due to an exaggeration and perversion of the normal growth, and was not in any way malignant.

Mr. R. White (of Norwich) said that about fifteen years ago he saw a remarkable case of hypertrophy of the gums in the practice of a surgeon at Norwich. The patient was a woman, aged 35; the whole of the gums, both upper and lower, were affected; the teeth, which were sound, being surrounded and embedded in the growth, so that only their

tips were visible. Owing to the difficulty of mastication, the patient was in a very weak state. The surgeon extracted the teeth, pared off the whole of the growth, and with good diet and tonics the woman made a good recovery. The growth did not recur.

Mr. Chas. Tomes said, in answer to an inquiry from the President, that he had never met with a case of true papilloma of the gum. He had, however, found that the surface of nearly all gum tumours, even that of an ordinary epulis, was composed of enlarged papillæ. This was not apparent when the tumour was examined superficially because the interstices between the papillæ were filled up with epithelium, but it was easily seen on looking at a section.

The hypertrophy of the gums referred to by Mr. R. White was of course quite a distinct disease from that under discussion. Some remarkable cases of this had been brought before the Society a year or two ago, by Mr. Christopher Heath, and about six months since a case had been sent to him by Dr. Walker, the subsequent history of which he did not know.

Mr. Coleman said he had only met with one case of papilloma of the gum, and that was in an elderly lady. The tumour, which had existed for many years, sprang from the inner alveolar surface of the upper jaw. It resembled in miniature a bunch of spring onions, being pedunculated, and rather paler in colour than the surrounding mucous membrane. It had not been increasing in size, and the patient was unwilling to have it removed. He recognized it from the drawings Mr. Salter had given of such growths.

The President then proposed a vote of thanks to Dr. Arkovy for his paper, and to the contributors of casual communications and specimens.

And this having been carried unanimously, the meeting terminated.

Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING.

December 6th, 1880.

ALFRED WOODHOUSE, Esq., President, in the Chair.

The minutes of the previous Meeting having been read and confirmed.

M. H. J. Bennett signed the Obligation Book, and was formally admitted to membership by the President.

The President announced that the following gentlemen had been duly nominated as candidates for membership, and would be balloted for at a subsequent meeting, viz., Messrs.—

W. H. Williamson, M.D., D.D.S., Aberdeen, &c., Union Terrace, Aberdeen.

H. P. Ferwald, L.D.S., Irel., Promenade, Cheltenham.

W. Scott Thomson, L.D.S., Eng., 77, Denmark Hill.

Stanley Cook, L.D.S., Eng., Castleman Villas, Barnes, Surrey.

Felix H. Weiss, L.D.S., Eng., 7, Montague Place, Russell Square, W.C.

Willoughby G. Weiss, L.D.S., Eng., 7, Montague Place, Russell Square, W.C.

The following gentlemen were then balloted for and elected non-resident members of the Society.

Messrs. Chas. Vincent Cotterell, Rochester, and Walter Paxton Harding, North Wales.

The President announced that at that meeting two members must be chosen to act as auditors of the Society's

accounts for the past year. In accordance with the rules, six gentlemen were nominated by the members present, and from these, the President selected Messrs. Storer Bennett and Jas. Merson to act as auditors.

Mr. George Lyddon then read the following communication on the behaviour of patients under nitrous oxide gas.

Mr. President and Gentlemen,

I am induced to bring the following cases under your notice rather with a view to their being put upon record than from any idea that they possess features of so remarkable a character as not to have been met with by probably many others in the course of the frequent administrations of gas which we are now accustomed to; and also because a discussion upon them may tend to throw more light upon perhaps, vitally speaking, the most important branch of our calling.

The first case is that of a clergyman, a wealthy man, and at the time I attended him, in the full exercise of parochial work. He was apparently a strong healthy man, but complained that he suffered a good deal from dyspepsia, and had not a good appetite; he therefore lived almost exclusively on biscuits, with champagne and claret. He had a good set of teeth, but nevertheless they were not quite perfect, and one was condemned to extraction. He determined to have the gas administered, not on account of any nervous fear, but purely to gain experience of its effects and to gratify a whim.

We accordingly administered the gas; I say *we*, for his usual medical attendant was with me. He inhaled it freely and well, but after taking a considerable quantity, told us that it was having no effect upon him anæsthetically, and we abandoned the attempt. Although he must have inhaled something like twenty gallons, it appeared to have no more effect upon him than if he had been inhaling common air. I then operated without any anæsthetic. I should say that I am in the habit of giving the gas from an Ash's six-gallon gasometer supplied from a liquid gas reservoir without any attempt at economizing in any way by the supplementary bag

or otherwise. I sometimes, however, give it from the india-rubber bag instead of the small gasometer, in either case filling the receptacle first and keeping up a stream of gas from the cylinder if needful.

An important question arises in my mind from the consideration of the case. To what extent, if any, does the frequent use of alcoholic stimulants affect the chance of a successful result from the administration of nitrous oxide or other anæsthetic? The experience of this case would seem to indicate that the frequent use of alcoholic stimulants nullifies the effect of nitrous oxide gas, which being itself in some respects a stimulant, assimilates so far to what the system is accustomed to. In this instance, however, the patient was by no means an inebriate, and I am inclined to think that in the case of those who take an undue quantity of less generous, but stronger stimulants, the gas might be contra-indicated as not unlikely to cause inconvenient excitement.

I will supplement this case by that of a lady who takes but little, if any stimulant. In conjunction with her usual medical attendant, I administered the gas to her with nearly the same result as in the case just mentioned, and in order to obtain the desired effect we had to abandon the gas in favour of chloroform; this we gave at the same sitting with perfect success.

Another case, which occurred in my practice some time ago, is that of a gentleman who pressed me very much to give him the gas, and on my refusal on the ground of his excitable temperament, he assured me that he had inhaled chloroform some time previously, and upon that based his argument that I might give him the gas. I however firmly, but politely refused, and on my next seeing a member of his family, his brother—who by-the-way was present on the first occasion—he informed me that though my patient had been under the impression that chloroform had been administered to him, practically such had not been the case; for as he refused to have an operation of a minor character performed without its aid the surgeon attending him poured a very little chloroform on a handkerchief, to start with, and afterwards added water

to sustain the delusion. This case marks its own lesson—in one word the advisability of *Caution*.

The next case which I should like to mention, if I have not already trespassed too much on your patience, is that of a gentleman to whom I administered the gas on September 30th, 1879; he then took it quietly and successfully in every respect. As there were several stumps to be removed he came again on October 2nd, when, from my previous experience of him, I had no hesitation in again administering the gas. This time, after inhaling it well for a short time, he rose up suddenly, and, to my astonishment, made a determined attack on the tumbler which my assistant had placed near him. He failed to aim correctly but, being a powerful man we also failed to get any control over him and he beat wildly about the room for some minutes, attacking everything that came in his way, including the door, but still apparently having the tumbler in his mind as the chief offender, until at last he succeeded in smashing it into atoms; after having done some other slight damage he fell exhausted on the floor. Presently he became tranquil and sensible, and was as much astonished to see the state he was in and the destruction he had caused as I was to see him do it. He now rose up, weak and exhausted as from some vast exertion, and after having a glass of wine to recover his energies, I advised him to return home (some miles distant) by train and defer the operations to another day. This he did, and at the next visit I did all that was necessary without the aid of an anæsthetic.

I should state that all air was as carefully excluded on this as on the former occasion and, this being the only case of the kind that I have met with, I am unable to account for his extraordinary conduct in any way, unless it may be attributed to the fact of his being a little tired from travelling and business during the earlier part of the day; this, however, is not a very satisfactory theory.

One other case, though not of much moment, may be worth mentioning. A policeman came to me desiring to have the gas administered for the purposes of an extraction. I gave it him, and took out his tooth successfully, but though

not conscious to surrounding circumstances, he was conscious of the presence of an assailant of some kind, so with a due regard for the duties of his office, he laid hold of my left arm with a grip from which I felt it would be unadvisable, and indeed useless, to attempt at the moment to extricate myself, he being apparently perfectly satisfied that he had his man. He soon recovered consciousness, and finding that he had me thus secured without any official warrant or authority, he duly apologised, and departed quite as much pleased at the result of the operation as I was amused at his conduct.

The PRESIDENT remarked that these were most interesting and peculiar cases. He could not relate anything similar from his own personal experience, for although he had had the gas administered for him—he never gave it himself—in a large number of cases, he had never yet met with a failure; possibly, however, some of the members present might have met with similar cases, or might be able to throw some light upon the cause of these exceptional phenomena.

MR. COLEMAN asked what length of tubing Mr. Lyddon used? If this was long, the friction was so much increased that it was difficult to get the gas supplied rapidly enough, and it became almost impossible to prevent the entrance of air when the patient inspired strongly. He thought that the experience gained by so many thousands of successful cases, pointed strongly to the probability that when a failure occurred, it would be found to be in some way due to imperfection in the apparatus used. His own experience was that *with a free supply of gas* failure was impossible. He had met with one curious case which had some bearing on the subject. Whilst giving the gas to a young lady whose eyes were unusually far apart, he heard a peculiar hissing sound, and on seeking for the cause, satisfied himself by actual observation, that the face-piece being very closely applied, air was at each forcible inspiration drawn into the nostrils through the punctæ lacrimales.

DR. WALKER asked whether the patient had bushy whiskers? what kind of cushion did Mr. Lyddon use? had the patient

very strongly marked features? He felt sure from his own experience that by some means or other, air had been admitted, and that the patient could not have breathed twenty gallons of pure gas without being fully anæsthetised.

Mr. Lyddon answered that he used between 5 and 6 feet of the ordinary tubing which was supplied with the apparatus. The patient had no whiskers, and there was nothing at all remarkable in his features. The cushion was of the ordinary patterns, supplied by Messrs. Ash; and as to the apparatus generally, it acted perfectly with the very next patient without any alteration having been made, and he had used it many times, both before and since, without any exceptional occurrence whatever.

Mr. Hunt (of Yeovil), said, that all who had experience in the administration of the gas, would conclude from the fact that such cases as that reported by Mr. Lyddon were so exceedingly rare, that when they did occur, there was the strongest probability that there must be some mistake. Some months ago, a gentleman wrote to the *Times*, declaring that he had been found insusceptible to the influence of nitrous oxide; and this elicited in reply, several letters pointing out the various sources of fallacy. One of these correspondents mentioned the case of a gentleman who was apparently proof against the gas, but on investigation, it was found that his unusually long nose kept the expiratory valve open, and that consequently he was breathing air instead of gas. He himself had never met with any case resembling Mr. Lyddon's. He used a 12-gallon reservoir, which was supplied from a 50-gallon gasometer. When about to give gas, he took off the balance weights, washed out the tube and bag with a stream of gas and gave the patient an unlimited supply of gas at considerable pressure. He believed that under these conditions, no patient could escape anæsthesia.

Mr. W. E. Harding said that he believed Mr. Coleman's remarks about the tube went to the root of the matter. He felt convinced that the tubes usually supplied with the apparatus were too small; having come to this conclusion he

removed the narrow tube supplied by Messrs. Ash with his apparatus and substituted one $1\frac{1}{4}$ inches in diameter. Since then he had found that patients took the gas better and with less excitement. He attributed this to the fact that the supply of gas being freer, there was less chance of drawing in air. Another point to which he attached importance, was one to which attention had been called by Mr. Clover, viz., that the gas should be supplied at some pressure. He always fully distended his rubber bag before opening the valve in the face piece, and kept up the pressure as the bag collapsed by putting his hand upon it. He remarked upon the curious fact that patients often had the same delusions on each occasion of inhaling the gas. Thus one gentleman took gas four times and on each occasion dreamed that he was being dragged down to the infernal regions.

Mr. Stocken said that one morning at the Dental Hospital all the gas cases proved unsatisfactory; he could not discover the cause at the time, but on the gas being carefully tested afterwards it was found to be mixed with air. He had had one case in his own practice when the patient was apparently insusceptible to the gas: he examined the whole of his apparatus very carefully but could not find anything wrong, and he could not explain the case.

Mr. Dennant said that although such cases were very rare, they did occasionally occur. Thus, a lady came to him one afternoon; he gave her a large quantity of gas, but it produced no effect; she was not even excited. He advised her to come again in the morning; she did so, and anæsthesia was induced without the slightest difficulty. He believed that the mental condition of the patient was a very important factor in such cases. For instance, a gentleman came to him in a state of great mental distress—he was white with fear. Mr. Dennant began to administer the gas, but the patient's breathing became so stertorous that he thought it best to desist; he therefore extracted the tooth when the patient was only partially anæsthetized, and he complained greatly of the pain. The next time this gentleman came he was calm, and

he begged that he might have a full dose of the gas, or if Mr. Dennant did not think it right to push it, that he would allow him to recover before operating. This Mr. Dennant agreed to, but on this occasion the patient took it quietly, and without any unusual symptoms.

Dr. Walker handed round a model of the mouth of a lad, 11 or 12 years of age, who had been seen by four or five surgeons, each of whom took a different view of the case. The patient was short and slightly built, undersized for his years, with small head, dark eyes, and thick coarse hair. His parents said, that until lately he never had any teeth in the upper jaw, and that he never had any of the first set in the lower. The lower permanent set was now erupted, and he had a few teeth in the upper jaw, but the peculiar feature of the case was a remarkable hypertrophous enlargement of the anterior portion of the alveolar process of the upper jaw; this was so great that the upper lip was pushed out and raised to the level of the nostril, producing a most unsightly distortion of the features. He was sent to Dr. Walker by Mr. Macnamara of the Westminster Hospital, after consultation with Mr. Tomes; they all agreed that both his appearance and speech might be greatly improved by a surgical operation, but to this his parents would not consent. The latter stated that the hypertrophy first began to be noticeable when the boy was about seven years old, but that it was only within the last 18 months that it had become so marked as to attract attention.

Mr. Ibbetson said that on looking at the model of the lower jaw he observed a condition which added somewhat to the interest of the case, viz., that the right central and lateral incisors were the subject of gemmination which, as an abnormal condition, ought not to be overlooked.

Mr. Hepburn said that the model reminded him of that of the mouth of Julia Pastrana, which was preserved in the Museum. It appeared to be a case of hypertrophy of the gum; he noticed that some of the teeth appeared to be buried and others broken away. It was remarkable that in

all cases of hypertrophy of the gums there was a tendency to the absorption of the crowns and even of the roots of the teeth. He thought it probable that many of the teeth which appeared to be absent in this case were only covered up, and that if the hypertrophous mass was cut into they would be found imbedded in it.

Dr. Walker replied that although, judging from the model alone, Mr. Hepburn might be justified in coming to such a conclusion; as a matter of fact it was not simply a case of hypertrophy of the fibrous structure of the gum; the whole of the enlargement was exceedingly dense and hard, and was evidently osseous.

The President showed a model from the mouth of a patient, aged 14, who had erupted the permanent canine quite outside the first bicuspid. As he still retained the temporary lateral and canine on that side, and it was evidently hopeless to attempt to bring the permanent canine forward into place, Mr. Woodhouse left the temporary teeth in position, and extracted the misplaced canine.

Mr. Coleman showed, for Mr. Davy of Romford, two supernumerary teeth. They belonged to a class of odontones which were not very rare, in which one tooth appeared to be developed within another. One was extracted from the mouth of a young man, a recruit, and the other from that of a girl.

Mr. J. C. Foran showed models of the mouth of a young lady, aged 16, showing a V-shaped dental arch, with unusual contraction in the neighbourhood of the second bicuspid, there being only a space of $\frac{2}{5}\frac{3}{0}$ths of an inch between the lingual surfaces of these teeth. The malformation was hereditary, her mother's mouth showing the same kind of deformity, though to a much smaller extent. In April last Mr. Foran removed the right and left upper second bicuspids, together with the lower right lateral incisor. The patient, who was told to return in about six months, had not yet presented herself; but Mr. Foran hoped soon to see her

again, and to be able to forward models showing the result of the treatment. The inferior maxilla did not present any unusual feature.

Mr. W. E. Harding showed a case of lateral delaceration of a central incisor. The tooth was removed from the mouth of a hospital patient; there was no history of any violence, and he could not think how it had occurred.

He showed also a lower molar which had been removed by his partner; it was a second molar with the wisdom tooth growing into it. He supposed that the explanation was that the cavity of reserve for the wisdom tooth was not separated from the second molar but had grown into it.

The President then opened a discussion on the advisability of removing or retaining the first permanent molars, with the following statement of his own mode of practice.

Gentlemen,

Some years since this subject was brought before the Society by the late Mr. Maclean, but as most of those who heard his paper are not present to-night we may, I think, profitably devote a short time to its reconsideration.

The first permanent molars are in man the largest in the dental arch, and being of the most complex form, are more liable to fissures and defects than any other of the teeth, and consequently are the most prone to decay. It is this fact which has induced some practitioners to advise the removal of these teeth in all cases at an early period of life, even where the teeth are not crowded, but my experience does not lead me to this conclusion.

We must all continually observe these teeth in a perfectly healthy condition in the mouths of patients advanced in life, a proof that they are not so hopelessly bad or deserve such wholesale slaughter as some would condemn them to.

If then, this tooth, being the best developed, or most firmly rooted, and consequently the most efficient grinder we have, and occupying the position where most work has to be done, is removed, the substitution for it of the much smaller second molar is a great source of weakness to the mouth which should, I think be avoided if possible.

If, therefore, in a crowded mouth I find that all the teeth are sound, I should, at the right age for thinning it, much prefer removing the first or second bicuspid—the second in preference, if there is no cogent reason for removing the first, the anterior surface of the first molar being thus rendered less liable to decay at a later period of life.

But when the patient is brought to me with a crowded mouth, and many of the teeth decayed, the case requires more consideration. Very often in such cases there is little choice, for the patient is not seen until the first permanent molars are extensively decayed, too much so to be preserved for life; that is they are so weakened by decay that it is evident they will not admit of an efficient and durable stopping a few years later. If the pulp is not diseased and the patient is under 12 years of age, I stop the molars so as to preserve them until the time arrives for their removal. For this I almost invariably use "Sullivan" as I find it possesses more good qualities for this purpose than any other filling.

I say if the pulp is not diseased, for I rarely, if ever, destroy it in the molar of a child. But if it is exposed, and has caused pain, I prefer at once to remove the tooth. It is difficult to get a young child to submit to the removal of a deadened pulp and to the filling of the roots, and except this is perfectly done, the tooth will not go on well. Besides it often happens that a molar may be decayed to the pulp before the ends of the roots are perfectly ossified, and this would render the operation of filling them a rather hazardous undertaking.

When children are brought to me periodically, I have the opportunity of examining the molars for decay, and I too often find that they are beginning to fail shortly after being erupted. The cavities are then small, the removal of the decay with the engine gives little pain and takes a very short time; the stoppings thus put in will save the teeth for eight or ten years, and at the expiration of that time they can be re-stopped with gold and rendered useful for life. This plan saves the child much pain, enables it to masticate its food, and gives me the choice at the right time of removing or retaining the first permanent molars.

It generally happens that the molars decay at this early period on the grinding surface, and then the above treatment will preserve them for life; but if they decay on the anterior or posterior proximate surfaces, although I preserve them by stopping until the time for thinning the mouth arrives, I generally then remove them, especially if I have stopped them behind, for I consider that there is then little, if any, chance of preserving them for life, for they are almost sure to decay again, and thus injure the anterior surface of the second molar. When I have stopped them on the anterior proximate surface at an early period, and after a few years, I find that the decay has not increased, and that the rest of the series are sound, I frequently decide to keep the tooth, especially if the second bicuspid can be advantageously removed, as then the molar is almost sure to last well for life.

If I decide, for any of the above reasons, to remove the first permanent molars or the bicuspids in a crowded mouth, I prefer delaying the operation until the child is about 13, that is until the second molars are fully developed. They have then little tendency to advance, and the tooth is occupied by the teeth in front falling back, which is what we desire.

In mouths which are not crowded it is, of course, also most desirable to preserve much decayed first permanent molars until the second are about to be erupted, in such a way that the child may be spared suffering, and may be able to masticate efficiently. But in such cases I prefer to remove these teeth earlier than I should in crowded mouths, as space for the bicuspids is not required, and it is desirable that the second molars should advance as much as possible. The removal of the first molar just before the second is erupted will generally ensure the latter retaining a more upright position than if the operation be delayed, and thus the tooth becomes a more useful and healthy member.

I generally prefer removing the whole of the series, be they first molars or first or second bicuspids, as the remaining teeth then articulate more perfectly, and the mouth is altogether more symmetrical. But there are exceptions to all

these rules which must be left to the judgment of each practitioner. For instance, it sometimes happens that one of the first permanent molars must be removed very early, whilst the rest of the series are so healthy that they can be retained for life; in such cases the second molar will come forward and articulate with the first, so forming a satisfactory denture.

The rules then that I have laid down for myself are—

If the molars are sound when the patient is 13 years of age, and the mouth is crowded, I remove the bicuspids in preference.

If I think that the molars, though carious, will admit of being stopped with gold at a later period, and the decay is not on the proximate surfaces, I retain them, but if they fail in these respects I remove them in preference to the bicuspids; but this rule, as I have indicated, cannot always be followed.

Mr. Thos. Rogers said it appeared to him that the President had stated the various aspects of the case so fairly and fully that he had left his audience very little to say. He believed that all present would agree in approval of the rules of treatment which they had just heard. It certainly had been the practice at one time to extract the first molars on the slightest excuse, but he believed this had now been generally discontinued. Formerly also, they were often extracted before the 12-year-old molars appeared, but it is now generally recognised that if they can be retained until the second molars appear, it is better. He himself was quite of Mr. Woodhouse's opinion that a first molar stopped would often last longer than a bicuspid, and if he had to sacrifice one or the other, he should in the majority of cases decide in favour of the molar.

Mr. F. Canton said he was decidedly in favour of retaining the first molars whenever practicable. In case of crowding, he thought that the removal of a bicuspid afforded more relief than did the extraction of the molar, and was generally preferable.

Mr. Hunt remarked that the President had put the matter

so clearly that he should be surprised to find that there were any dissentients. Cases did however occur in which the removal of one, or even of both, of the bicuspids did not entirely relieve the crowding, and in which it was absolutely necessary to extract the first molars. He had met with a gentleman who, although he was 6 feet 4 inches in height had a remarkably small jaw, and the teeth were so crowded that after *both* biscuspids had been removed, the first molars had also to be sacrificed; now the canines were in contact with the second molars.

Mr. S. J. Hutchinson said he wished to say a few words with reference to one of the points touched upon by the President, viz., that when the first molars were extracted with the view of relieving a crowded condition of the front teeth, the space thus obtained was sometimes lost by the second molars moving forwards, when it had been hoped that the teeth in front would have moved back. This was especially liable to occur, as the President had pointed out, if the 6-year-old molars were extracted too early, *i.e.*, before the eruption of the second molars; but it also occurred not unfrequently even when the operation was deferred until these teeth were fully erupted, if all the 6-year-old molars were removed at the same time. He believed that if you wanted to gain space for the expansion into line of over crowded front teeth, it was important to extract only one pair of first molars at a time—the upper pair first for preference. The lower second molar was then kept in place by the retained first molar, and by its articulation with the upper second molar had a strong influence in keeping that tooth from moving forward. When the upper front teeth had been got fairly into line, the lower first molars might be removed, and the lower second molars would now in turn be kept back by their articulation with the upper pair.

He agreed with Mr. Woodhouse that it was not easy to fill roots which were not fully formed, and that it was best not to attempt it. He had, however, obtained excellent results from the modification of the operation of rhizodontophy, which he believed had been first practised by Mr. H.

Long Jacob. This consisted in clearing out the pulp cavity, covering the floor with a plate of platinum, and drilling a hole into the root through the neck of the tooth just above the level of the gum. The pulp cavity could now be filled over the platinum and a tooth so treated would remain quiescent for some years.

Mr. Thomas Rogers remarked that the operation to which Mr. Hutchinson applied the term rhizodontophy was very different from that to which it had originally been applied. It was devised as a means of treating cases in which the living pulp was exposed *without being under the necessity of clearing out the pulp cavity*, and it consisted in drilling down to the living pulp at the neck of the tooth and severing it at this point. It was found that after this had been done it was possible to fill over the pulp with a fair chance of success. The operation was at one time rather extensively practised, but had now fallen in professional estimation.

Dr. Walker said that he had been for 14 years dental surgeon to a hospital situated in the midst of probably the lowest class of population in London, and during that time he had noticed a steady and rapid deterioration in the condition of the first molars. When first he entered upon his duties the majority of the children who came to time had these teeth in a fairly perfect condition, the enamel being only fissured; but now they seldom showed any enamel at all to speak of, and in the case of most of them the crown was gone as well: directly a child of 8 to 10 entered his out-patient room he expected to be called upon to extract a first molar. Amongst the higher classes the state of things was not much better, and though he was always glad to extract a bicuspid instead of a first molar if he could do so with advantage, he was sorry to say that the condition of the molars seldom left him any choice in the matter.

Mr. Ashley Gibbings said he quite agreed with what the President had said respecting the importance of removing the corresponding teeth on both sides; he had met with cases in

which the patient's appearance had been greatly injured by inattention to this rule, the centre of the arch being driven to one side and the symmetry of the mouth spoiled. With regard to the extraction or retention of the molars he thought it was difficult to lay down general rules; there were so many points to be taken into consideration: he should prefer to judge of each case by itself. He believed that one cause of the failures which occurred in the treatment of over-crowding by extraction of bicuspids or first molars was inattention to the bite; it was useless to expect a tooth in the upper jaw to move back when it was kept in place by one in the lower: the bite should always be carefully examined before the plan of treatment was fully decided upon.

The PRESIDENT said he had nothing to add to his opening statement, nor had those who had taken part in the discussion called upon him for any defence or explanation; he had therefore only to thank them for their complimentary speeches.

The PRESIDENT then proposed the usual vote of thanks to Mr. George Lyddon and the other contributors of the evening, and the meeting terminated.

Odontological Society of Great Britain.

ANNUAL GENERAL MEETING.

January 10th, 1881.

ALFRED WOODHOUSE, Esq., President, in the Chair.

The minutes of the previous Meeting were read and confirmed.

The President then declared the ballot open for the election of officers for the ensuing year.

The President then called upon the members present to nominate six of their number, from amongst whom Messrs. Isidor Lyons and Geo. Payne were selected, to act as scrutators of the ballot papers.

Mr. Chas. Vincent Cotterell, signed the Obligation Book, and was formally admitted to membership by the President.

The President announced that the following gentleman had been proposed for election, and would be balloted for at a subsequent meeting :—

Richard Wentworth White, M.R.C.S. and L.D.S., Eng., St. Giles Street, Norwich.

The following candidates were then balloted for and unanimously elected members of the Society :—

Adolphus Benjamin Alexander, L.D.S., Eng., 27, Gordon Square, W.C., London, resident member.

Llewellyn Harding, L.D.S, Eng., Lorne Street, Manchester, non-resident, and Edouard Brasseur, M.D., Paris, 6, Rue Mogador, Paris, corresponding member.

It was proposed by Mr. G. A. Ibbetson, and seconded by Mr. Edwin Saunders, that Mr. Fletcher be elected an honorary member of the Society.

The President, before putting the question, observed that Mr. Fletcher had now retired from the practice of the Profession, to which he had been an ornament for many years; he was one of the original members of the Society, and in adding his name to the list of their honorary members, he (Mr. Woodhouse) considered that the Society would gain as much honour as the individual.

The motion was carried unanimously.

Mr. Parkinson proposed the following alteration in Bye-law 19. That after the words "Resident Members" should be inserted the following:—"but that the Council may recommend a President from among the non-resident members not oftener than once in three years." He had great pleasure in recommending this alteration, which had been for some time past under consideration of the Council, to the approval of the members generally. Many had expressed a desire that it were possible occasionally to elect a non-resident member as President, but under the existing rules this could not be done. He thought that the change would be beneficial in many ways; it would enable the Society to confer the highest honour on some of its most valued members, and would increase the interest of the country members in the internal administration and general welfare of the Society.

Mr. F. Weiss said he felt convinced that the proposition would meet with the approval of the members. There were among the country members, many to whom both the Profession and the Society were greatly indebted, but upon whom it had hitherto been impossible to bestow that recognition of their services to which all felt they were justly entitled. He could only call to mind one possible objection, viz., that corre-

spondence with a President living at a distance from London, would add to the work of their already heavily taxed honorary secretaries. But he did not believe that this would occur; he felt sure that any gentleman who had the honour conferred upon him would not mind a little trouble and expense in journeys to town in order to lighten the secretaries' work as much as possible. In all other respects the alteration would be decidedly beneficial.

Mr. Oakley Coles remarked that giving the Council power to recommend, did not seem to him sufficient; he suggested that it should be "that the Council may recommend and the Society may elect a President," &c.

Mr. Parkinson said he quite understood Mr. Coles's criticism. He thought it would be simpler to say "that the Council may recommend *for election* a President," &c.

The President said he felt it was unnecessary for him to add anything to what had been said in favour of this proposition. It was evident that the existing law debarred from the office of President many good men who would do honour to the chair, and the advisability of removing this obstacle had been generally recognised.

The motion, as amended, was then put from the Chair, and carried unanimously.

Mr. Wallis showed his adaptation to dental requirements of Mr. Lennox Browne's Lime-light Illuminator. There was no need for him to apologise for bringing before them this apparatus, which would, he believed, be found to be just what was wanted at this time of the year. There were already in use several forms of reflectors and condensers intended to enable one to work by the light of ordinary gas; but these would be found unsatisfactory just when most wanted, viz., on foggy days, on account of the very inadequate supply of gas which was generally furnished in the day time. This apparatus had been arranged by Mr. Lennox Browne for use with the laryngoscope, and he (Mr. Wallis), by making a few alterations, had adapted it to the requirements of dental practice. It could be adjusted to any height and to any angle, could be

turned off and on in an instant, and was perfectly safe. He had used it for two months on foggy days and also at night, and had found it by far the best form of artificial illumination which he had yet seen. The amount of common gas burnt was very small, and the oxygen cost only $2\frac{1}{2}d.$ per hour, excluding the time and labour spent in making it. He had been in the habit of making the oxygen, or getting his assistant to make it, during leisure time, and keeping it stored in bags, but by means of a very convenient apparatus called Chadwick's Oxygen Generator, this gas could be made as required and when required, during the progress of an operation, and without any trouble to the operator. As to the cost of the Illuminator, it had amounted in all to £13 18*s.* 6*d.*, including retorts, &c., for making the oxygen, and bags for storing it. Mr. Browne's lantern cost £5 5*s.*, and the stand £2 10*s.*; the latter was made to order, and was of course more expensive on that account; whilst if Chadwick's Generator was used the bags could be dispensed with. Should there be any demand for the apparatus the cost could be considerably reduced. It had been made by Messrs. Woods, of Cheapside, by whom his suggestions had been admirably carried out.

Mr. Lennox Browne said Mr. Wallis had scarcely done himself justice in describing the modifications he had introduced in order to adapt the light to dental work; they were indeed very considerable. Still he (Mr. Browne) did not yet consider it perfect, and he was very pleased that it should have been thus formally introduced to the dental profession, since dental practitioners were generally men with a great talent for mechanical contrivance and invention, and he had no doubt that if they once took it in hand further improvements would soon be effected.

The President asked Mr. Wallis if he did not think that if the light was much used there would be danger of injury to the eyesight of the operator? In working with gold, especially, the reflection must be very dazzling.

Mr. Browne said the light could be easily modified by the use of some solution instead of plain water in the trough

which was placed to intercept the heat. A ready means of doing this was to add a few drops of common ink to the water. But ordinarily he did not think that the operator would suffer any inconvenience.

Mr. Coleman said that although the light appeared so bright it was not nearly so strong as direct sunlight: this could be shown by throwing the lime-light on to a screen exposed also to the sun, when it would be found that the latter would throw a shadow in spite of the oxy-hydrogen light.

Mr. F. Weiss said it might be well to know that nitrous oxide gas could be burnt in this light instead of oxygen with nearly the same effect; as nitrous oxide was always at hand, it might sometimes be convenient to use it for this purpose.

Mr. S. J. Hutchinson said that oxygen could be obtained in bottles containing 100 gallons compressed into a small bulk, and at a very moderate cost. Those who did not care about the trouble of making the gas would find these very convenient.

Mr. F. H. Weiss (junr.) suggested that if the light was at any time found to be too brilliant, it could easily be toned down by screens, as was done with the ordinary magic lantern.

Mr. Wallis said he did not think it would be found too bright. He had used it on one occasion for two hours without intermission, and had not found it fatiguing to the eyes. One great advantage was its steadiness; it did not flicker like gas. The direct glare was certainly disagreeable to the *patient*, but this was obviated by providing him with a pair of tinted spectacles.

Mr. Oakley Coles called the attention of the Society to an operating chair for hospital use, made by Messrs. Smale, of Great Marlborough Street. It was very serviceable and cheap, costing with moveable seat, head rest and bracket, only £3 10*s*.

Mr. Dennant said that at the November meeting the President originated an interesting discussion on the subject of the

alleged practice of gold-filling by the ancient Egyptians. An abstract of this, which appeared in the "British Medical Journal," had called forth two letters, neither of which however supplied any additional evidence in favour of the antiquity of the practice. One writer, after quoting Sir Gardiner Wilkinson's statement, the accuracy of which had been called in question by several members of the Society, adds: "I *believe* that additional confirmation of the fact may be found in Thomas Pettigrew's 'Egyptian Mummies,' *or* in Bunsen's 'Egypt's Place in Universal History.'" The other writer says: "I *think* I have seen gold-stopping there" (*i.e.* at the Etruscan Museum at Corneto, the ancient Tarquinia) "*or* in the Etruscan Museum at the Vatican, *or* at Signor Augusto Castellani's here." This "I think" and "I believe" was the kind of evidence on which the belief in the knowledge of the art of gold-filling amongst ancient nations appeared to rest. Since that meeting he had himself been able to confirm by another example the probable accuracy of the President's explanation of the way in which the belief originated. In the Brighton Museum was the head of a mummy which had always been credited with possessing a tooth which had been stopped with gold. He had taken an early opportunity of examining this specimen, and found that there was, as the President had suggested, only a superficial coating of gold on the tooth, and that there was no filling of any kind. There were also traces of gold to be seen on the margins of the hard palate.

Mr. Oakley Coles suggested that the secretary for foreign correspondence should write to Professor Erbs of Berlin, who was undoubtedly the greatest Egyptologist of the day. His opinion would probably set the matter at rest.

The President announced that Mr. Browne Mason of Exeter had sent for exhibition a curiously malformed left upper molar, which he had extracted from the mouth of a youth aged 17: that Mr. J. A. Gartley of Sackville Street had sent for the museum a preserved specimen of the cobra di capello: and that Mr. W. S. Burrows of Regent's Park had presented a handsomely mounted stand of dental curiosities.

Mr. F. Canton showed models of the mouth of a child aged 4 years; it was healthy and had never had any illness yet; there were but 4 teeth in the upper jaw, and 2 in the lower. The next child in the family, 2 years younger, had its full complement of teeth.

Mr. Oakley Coles said he hoped that some steps would be taken on behalf of the Society, to obtain models of the mouths of the "Midgets," which were now being exhibited in London. He would suggest that formal application for permission should be made to the proprietor by some official connected with the Society. From what he had been told, he believed that a cast of the mouth of the Mexican girl would show the existence of several very interesting peculiarities.

The President then called upon the Treasurer to read his report.

Mr. Parkinson said that the state of the Society's finances was, as it had been for several years past, very satisfactory, since after meeting all claims, they closed the year with a balance of £89. The only noticeable feature in the accounts was the expenditure of £96 in providing additional show-cases for the museum, and he thought that those who had seen the improvements thus effected, would agree with him that the money had been well spent. After careful consideration, it had been thought right by the Council to remove from the list of members the names of ten gentlemen who, in spite of repeated applications, had allowed their subscriptions to fall more than three years into arrear. There had been besides these, five deaths and five resignations, but as twenty-three new members had been elected during the year, the result on balance had been a slight increase in the numerical strength of the Society.

A detailed statement is subjoined.

Treasurer in Account with THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN,
for the Session ending 31*st October*, 1880.

DR.	£.	*s.*	*d.*
To Balance at Bank, 31st October, 1879	646	7	4
Annual Subscriptions	384	6	0
Entrance Fees	59	17	0
Arrears	47	5	0
Sale of "Transactions"	16	10	6
Interest on Stock	34	13	0
Interest on £200	5	14	0
	£1,194	12	10

CR.	£.	*s.*	*d.*
By Rent (one year)	80	0	0
Printing and Publishing "Transactions," &c... ..	156	11	6
Reporting..	19	19	0
Refreshments	24	15	4
Library	8	15	7
Museum	96	0	0
Sundries	30	3	9
Stock purchased	35	14	9
Postage and Receipt Stamps	7	15	0
	£459	14	11

	£.	*s.*	*d.*
Receipts 31st October, 1879	£548	5	6
Expenditure ditto	458	15	2
Surplus over Expenditure	£89	10	4

ASSETS OF THE SOCIETY, 31ST OCTOBER, 1880.

	£.	*s.*	*d.*
Stock in New 3 per Cents	£1,208	5	7
Cash at Bank, at Interest, and in Treasurer's Hands	735	17	8
	£1,944	3	3

STATEMENT OF DEATHS, RESIGNATIONS, MEMBERSHIPS LAPSED, AND NEW MEMBERS ELECTED, ETC., DURING THE SESSION 1879–80.

Deaths—Resident	
Non-Resident	5
Honorary and Corresponding	1
TOTAL ..	6
Resignations—Resident	4
Non-Resident	1
TOTAL ..	5
Members in arrear at Audit, 4th January, 1881—	
Resident	9
Non-Resident	30
TOTAL ..	39
Members elected during the Session 1879–80—	
Resident	11
Non-Resident	11
Honorary Corresponding	1
TOTAL ..	23
Members removed by order of Council for non-payment of subscriptions—	
Resident	3
Non-Resident	7
TOTAL ..	10
Number of Members, 31st October, 1880—	
Resident	113
Non-Resident	206
Honorary and Corresponding	53
TOTAL ..	372

The SECRETARY then read the Report of the Curator, which was as follows:—

"During the past year the work of re-arranging the Museum and preparing a new edition of the Catalogue, had been completed by Mr. Bernard Major and Mr. Willoughby Weiss; the former gentleman having been compelled to leave town at the beginning of the year, the work during the remainder of the time has fallen wholly upon Mr. Weiss. The Curator is able to report that the Museum is now in thoroughly good order, and begs to express his thanks to Messrs. Major and Weiss for the manner in which they have carried out the work entrusted to them.

"New cases have been added to the Museum, for the better display of the smaller specimems.

"The Catalogue, also prepared by Messrs. Major and Weiss, is in a forward condition, and will shortly be printed; for it Mr. Mummery has kindly arranged the anthropological specimens in the Museum."

MR. WEISS then read his report as Librarian. He felt pleased at being able to announce to the members that the Library was in a thoroughly efficient condition. Only eleven books, exclusive of magazines and periodicals, had been added, but this was owing to the fact that very few works bearing on Dental Science had been published during the year, and the catalogue of old and rare books might now be considered nearly complete. During the last session twenty-nine members had availed themselves of the privilege of borrowing books, and 122 volumes had been made use of by students, which compared favourably with past years. He was also glad to say that the Library had been used very generally as a reading room, and that at the present time no books were missing

Mr. Gaddes asked, whether by "students" Mr. Weiss meant those of the Dental Hospital of London only, or students generally, including those of the National Dental Hospital?

Mr. Weiss answered that according to the bye-law he considered that he had no power to issue books except to students of the Dental Hospital of London.

Mr. Coles said there was no bye-law on the subject; the issue of books was governed only by a regulation of the Council.

Mr. Chas. Tomes said that Mr. Gaddes' remarks would seem to imply that undue favoritism was exercised towards students of that hospital to the exclusion of others, but he should not like members to suppose that this was the case. There was very good reason for the existence of the present regulations. It should be remembered that the students in that building were under their constant observation; if a book which was wanted by a member was found to be in the possession of a student, the porter could obtain its return at a few hours' notice, and in the same way they were carefully secured against loss and damage: but it would be a very different thing to issue their books to students of whom they knew nothing and over whom they had no sort of authority. Such an extension of the rules as Mr. Gaddes appeared to wish would entail considerable expense on the Society, and he, for one, could not think that it would be desirable.

The Scrutators announced that the list of officers for the year 1881, which had been recommended by the Council, had been unanimously approved of by the rest of the Society, and that the gentlemen named therein were therefore all duly elected.

The President then proceeded to deliver his valedictory address as follows:—

PRESIDENT'S ADDRESS.

Gentlemen,

The year during which you have given me the high privilege of being your President, has at length come to an end, and I now for the last time address you from this chair.

I feel conscious that its duties might have been far better fulfilled, but though I truly feel this, I have at least this satisfaction, that my health has permitted me to attend to the business of my office at all your meetings, a result which I scarcely hoped for when I accepted the chair.

In my inaugural address, I traced the history of our speciality during many past years, a period of the greatest importance to us. I think that the events of the year now expiring have an equal meed of congratulation; for as a profession, and a Society, we have, I believe, been making good and steady progress.

We have seen the British Dental Association hold a Special General Meeting, in which many weighty topics were considered relating to the efficiency of that body in carrying out the Dentists' Act, which to us and the public, is the most important legislative measure that has yet been passed connected with our profession.

This Meeting was followed by an interesting paper by Mr. Coleman; and this, after a short interval, by another gathering to present testimonials to those gentlemen who had done so much to bring us to the position we now occupy. This event was, I consider, the culminating interest of the day, for we all felt it a delight to be able, in however imperfect a

way, to show to Mr. Tomes and to Mr. Turner, the appreciation in which we held their great work and the sacrifices they had made for their professional brethren.

At the dinner which followed, other, and more savoury subjects were presented for discussion, and were, I think, duly appreciated; after which both pleasant and profitable things were said, and we parted company that night, feeling that we were more closely united than we had been before, and that our body was both more compact and stronger, and better able still further to advance in the onward path of progress.

The British Dental Association may congratulate itself on having already two branches, which are showing energetic life, and will, I trust, bear good fruit. It however needs more subscribers, that its funds may enable it efficiently to fulfil the work for which it has been called into existence.

But coming back to the more immediate concerns of our Society, I think that we may consider that the session has been one of interest. On our first evening we had a paper by Mr. Oakley Coles, on deformities of the upper jaw, and an ingenious attempted classification of them into typical forms by a method of measuring their several proportions. He suggested a series of names so as to define each variety. He propounded ingenious theories as to the cause in fœtal life for these malformations, and considered how far such conditions were hereditary and an indication of deterioration of race.

We had a lively discussion on this paper on a later evening, there not being sufficient time for its consideration on the evening on which it was read.

Dr. Lander Brunton gave us a very interesting and valuable paper on nervous affections connected with the teeth, a paper which will well repay our members carefully to peruse. In it he scientifically traced the track through which the irritation set up in the teeth passed, producing spasms in the accompanying vessels in its course, and develop-

ing pain in comparatively remote regions—pain which is too often considered to arise from other causes, and treated constitutionally, when the seat of irritation should have been first sought for, and the cause removed. He illustrated his paper by many cases, and in the discussion which followed, others were brought before us by members, all showing how important it is in nervous pains, especially of the head and neck, carefully to examine the teeth before deciding the character of the neuralgia.

To Mr. Arthur S. Underwood we were indebted for bringing before the Society for the first time the operation of nerve-stretching. He described cases of terrible neuralgia which had existed for years, and which no remedy then known could relieve. In one, after years of suffering, the patient was permanently cured by two operations of nerve-stretching. Many other cases were given in which an equally good result followed this operation, and in none had any ill effects followed the stretching of the nerve, though in two, death had followed the operation, one from hæmorrhage, and the other from erysipelas. We must all rejoice that we have in this a cure for cases of suffering which before resisted all known remedies.

Mr. Edwin Canton gave us a most interesting series of cases of great constitutional disturbance caused by the absence of sufficient masticating power, which were cured by artificial teeth being supplied to the patients. He also reported some cases of epilepsy and paralysis, which he considered due to dental irritation.

On the same evening we had a paper by Mr. Mummery on a remarkable series of cases of diseased conditions produced by irritation of the dental pulp. One of strabismus, accompanied by blanching of the hair on one temple, caused by defective teeth. When they were removed, the squint was cured, but the hair continued white. Another case, where deafness was cured by the removal of a tooth. Also several

other curious instances of the relief of severe and remote pains by skilful dental treatment.

Mr. F. R. Lloyd, of Agra, favoured us with a short paper describing the case of a lady suffering from tumour in the upper jaw, which he was able to diagnose as cancerous from the microscopical examination of the periosteum of the third molar, which was diseased, and which he removed. The tumour was afterwards eradicated, and the patient lived for many years without any return of its growth, which he attributed to the early discovery of its character.

Dr. Arkovy, on the same night, gave us a paper on papilloma, which you must all have listened to with much interest.

Our last evening was occupied with the discussion of the advisability of retaining or removing the first permanent molar—a subject of considerable importance.

The time for casual communications has always been well employed, for it gives the opportunity of bringing cases of interest from our every-day practice before the Society, which otherwise would be only confided to a chosen friend or two, but which often are very teaching, and far too good to be lost to the profession at large.

Both the papers and casual communications have been followed by active discussions, showing that the subjects were well chosen and were interesting to the members.

To-night you have been asked to confirm a proposal of your Council, that every third year your President may be elected from among country members, and I am glad that you have given your approval to the measure, for you will thus enjoy the advantage of having in this chair most valuable men who, until now, have been debarred from the office by the laws of the Society. We are the Odontological Society of Great Britain, and I consider that all the members should be eligible to all the offices of the Society, and this you have now enabled them to be.

We must now turn our thoughts to those who have been called away from among us by death during the past year.

We have to lament the loss of Mr. W. A. Roberts, of Edinburgh, a former Vice-President of our Society, and one who was always active in advancing the interests of our profession.

Mr. J. D. Garratt, of the Isle of Man, Mr. Gillam Mosely, of Sheffield, Mr. H. Baron Rodway, of Torquay, and Mr. P. S. Boulger, of Norwich, are also members of our Society who have passed away.

We have to lament the death of a very gifted Honorary Member of our Society, William Sharpy, M.D., F.R.S., who for forty years held the chair of Physiology at University College. Indeed, he founded the practical teaching of the Science of Physiology, and his works on Anatomy and Physiology are in the highest repute throughout the world. In these books due prominence is given to all that was known of the development and structure of the teeth when they were written.

But we have to deplore the loss of an honorary member who attained high eminence in the scientific world, who died last year at the ripe age of 87.

The late Mr. Thomas Bell was educated as a Surgeon, but from an early age practised as a Dentist, and continued to do so till 1860, when he retired and went to live at Selbourne, occupying the house rendered famous as the residence of the Rev. Gilbert White. A more suitable successor could scarcely be found to that naturalist.

It would be out of place here to enumerate all the honours that were heaped upon Mr. Bell; or to mention all the works on scientific subjects he published. Suffice it to say, he was recognised in all countries as one of our leading men of science, and honoured accordingly.

The career of Thomas Bell should be an incentive to young

men now entering the profession to follow his example, and not rest satisfied with the position it gives them, but taking up some study, seek to occupy their spare hours with it. They will thus enjoy their leisure during the active years of life, and have resources when they retire from it.

With some knowledge of Geology, every hill, every railway cutting, every river bed or sea cliff has an interest. Or if Botany or Entomology have been studied, a walk which otherwise would be uninteresting is full of delight. If sketching be taken up, Nature has new beauties, for you have learned how to appreciate a landscape, you know why it is beautiful, and having understood the mechanism of it, it remains pictured in your memory. If Archæology or Architecture be studied every building has an interest that you see.

With some knowledge of the Physical Sciences, all Nature has an interest, and life only seems too short for the appreciation and enjoyment of the wonders around you. Then there is Music, with its refining influences, and Painting, with its engrossing interest; Chemistry and Electricity with their magical results. Any or all of these you have some time to study; and with a mind cultivated thus, leisure is a delight, be it the quiet evening, the half-holiday, or the longer vacation; and the prospect of declining years with enforced absence from the operating room is not to be dreaded but rather looked forward to with longing desire.

Without such resources our work becomes drudgery and our leisure irksome; there is no relaxation for mind or body, and men are apt to take up habits which destroy health and unfit them for the discharge of the duties of life.

Our profession has lost one during the last year, bearing a name well-known and honoured for two generations; whose death, though he was not a member of our Society, should not, I think, be passed over in silence. I refer to Mr. George Darby Whaite. His father was Dentist to George IV., and he, after studying in Paris, passed the College of Surgeons in

1824, and then succeeded to his father's practice; this he conducted till 1843, when he was induced by a member of the Imperial Family of Russia to go to St. Petersburgh; there he remained for some years, but at last returned to London. He was one of the Presidents of the College of Dentists, which office he held for some time.

Although not a member of the Odontological Society, nor indeed a countryman of ours, I feel I must not omit to notice the death of one whose name is familiar to us all, Dr. Samuel Stockton White, of Philadelphia, U.S. He originally practised as a dentist, but for many years has been a manufacturer of mineral teeth and dental requisites, and these he brought to such perfection that there are few dentists in any part of the world who are not indebted to him for some of their choicest instruments. For our own sakes let us hope that his mantle has fallen on one who will continue his good work.

From various causes certain defaulters among our members have not been removed from our list for the last few years; but lately the Council decided that ten who had not paid their subscriptions for from three to five years should be struck off, and their names will therefore cease to appear among our members.

Besides these we have one resident and three non-resident members who have retired, so that altogether our loss in members this year is 17.

We have, however, 23 new members who have been elected during the year, so that we close our annual report with an increase in numbers.

In this age of progress it is pleasant to know that our own speciality has at last been aroused to advance, and each year sees it gaining both in the scientific and social world, but much land has yet to be conquered and occupied, and it behoves all of us to bestir ourselves to further advance the interests of our profession. We can do so collectively by our Societies

and Associations, but we must remember that these are composed of individuals, and that as are the units so will be the whole body.

Let us each then see that we act loyally to each other and to our patients, each speaking of his fellow-practitioner as if he was at his elbow, and each treating his patient as if he himself were the patient instead of the operator. If all thus act, the time will not be far distant when men will be proud to say that they are Dentists, for all will speak well of them.

This year is to be a stirring one in this city. The International Medical Congress is to hold its meeting here in August, and we have a Section in its programme. Our Society must play an important part in these proceedings, and it must be a satisfaction to you all, as it is to me, that we shall have a President who will uphold the dignity of our Society in a manner that few can.

And now in resigning the chair to him, let me once more thank the Society for the honour they have done me in placing me in it. Let me also thank the Council for their punctual attendance at all times, and for their patience in considering and discussing difficult questions brought before them, and for their courtesy to me at all times. To our most worthy Treasurer I am sure I may add your thanks to my own for his long and unwearied devotion to the interests of the Society. But personally and specially I have to thank our Secretaries for their intelligent and indefatigable assistance, without which I am sure I could not have fulfilled the duties of my office even in the imperfect way in which I have performed them.

It is with great pleasure that I resign this chair to one who, being known and tried, will I feel sure not disappoint your most sanguine anticipations.

The President having concluded his Address :—

Mr. Edwin Saunders proposed that the best thanks of the Society be given to Mr. A. J. Woodhouse, for the zeal and ability he had shown in conducting the affairs of the Society during his year of office, and for the time and trouble which he had devoted to the furtherance of its interests. Instead of trying to enumerate all that Mr. Woodhouse had been and had done as President, he would rather sketch what, according to his own idea, an ideal President should be. An ideal President should be, before all things, a gentleman both in education and manners. He should be patient and forbearing in the execution of his duties, tolerant of others' opinions, and not too persistent in his own; he should be sparing of speech, and when he did take part in the discussions, his words should be genial and suggestive, calculated to elicit the opinions of others; he should also be thoroughly impartial, giving both sides an equal hearing, and not given to forcing his own opinions on the meeting. Let the members apply these traits to the case in point, and they would find that they had not to go far to find the original of their ideal President.

Mr. Woodhouse replied that he was very pleased to hear the remarks which had fallen from Mr. Saunders; they referred, of course, to his successor, and gave a very correct representation of what the members might expect during the coming year. He would take the opportunity of asking the Society to give a hearty vote of thanks to the Treasurer, Librarian, Curator, Editor of the Society's Transactions, and above all, to the Secretaries. He spoke more strongly with regard to them, because he personally had so greatly benefited by their labours and active co-operation. The members generally only heard of the *results* of the work done, but

could not know the amount of labour they had to get through in managing the affairs of a large and widely spread Society such as this.

Mr. James Parkinson returned thanks on behalf of himself and colleagues, and said he would gladly place his services at the disposal of the Society so long as he could be of any use.

Mr. Hutchinson added a few words on behalf of the Secretaries, saying that the work they had to perform was a pleasure so long as it was so well appreciated by the members.

The President then declared the meeting adjourned until 7th February.

Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING.

February 7th, 1881.

THOS. A. ROGERS, Esq., President, in the Chair.

The minutes of the preceding Meeting having been read and confirmed,

The President proceeded to deliver his Inaugural Address:

PRESIDENT'S ADDRESS.

Gentlemen,

By your kindness I again occupy, after an interval of sixteen years, the honourable position of President of this Society, the highest, in my opinion, in the bestowal of the Dental Profession. When I ceased, last year, to be a Member of the Dental Board of the College of Surgeons, I believed my public life to be finished, and I shelved my books and packed up my microscope. But I am grateful for this additional favour to the many you have already shewn me, and for this reason especially: that, as my public work commenced in the service of this Society, so it may fittingly terminate in its service—a pleasant and willing service of a quarter of a century.

Yet when I think of the many members who would fill this

chair so worthily, I cannot but feel some remorse at thus blocking their way; some such sensation as I could imagine the "tenant for life" of a great estate and a great name to feel, when he sees his sons—and his sons' sons—able and ready to assume his title, and administer his revenues. In this instance indeed, my heirs are much more worthy to take my place than always happens in my imagined instance. And it is no slight evidence of their fitness for future responsibility, that they are so willing to exercise the restraint and self-denial of postponing their just claims. I hope, with all my heart, Gentlemen, to deserve your confidence. But no one can feel more sensibly than I do, how much I am likely to need your aid and forbearance during this anxious year. And it is my chief support, under what would otherwise be an almost overwhelming sense of responsibility, to know that your assistance is scarcely likely to be withheld.

In considering what should be the nature of my address this evening, I have been strongly tempted to look back, as is perhaps natural at my age, over the last busy quarter of a century, and to compare the present of Dental Surgery with its past. But the subject has been so often and so ably treated of late, that there is little for me to say which would be novel. There are, however, two anniversaries falling due this year, which are worthy of remembrance. Twenty-five years ago on the coming 1st of July, our periodical literature may be said to have commenced with the appearance of the first number of the "British Journal of Dental Science;" and on the following 10th of November this Society held its first public meeting. Previous efforts had been made to establish a Society and a periodical, but the time had not been yet ripe. But in 1856 the minds of men were fully prepared, and the very anxiety which prevailed gave rise to such an effervescence of opinion that for a short time we were impeded by our own eagerness. It soon, however, became evident that the leaders of opinion had the same end in view,

namely, the educational progress of the Profession, although they viewed it from different stand-points. One of the main objects of our Society, namely, the "promotion of intercourse among members of the Dental Profession" was soon attained, with the anticipated result; and some present can testify that a supposed antagonism speedily became a real and lasting union. Our Society may justly be proud of the great educational work which has been mainly accomplished by its efforts. In my opinion its political work is now finished. Not only have the majority of its members been elected into it quite irrespectively of their views upon Dental politics, but the views of its older members have in some instances diverged as the educational movement has developed itself. We may safely, and indeed, profitably, differ widely upon scientific subjects which involve no corporate action, but we might endanger our present prosperity if we were to commit ourselves to a course of Dental politics from which, whatever its tendency, some of our members would be sure to dissent. And besides, our very vigorous young relative the British Dental Association is fully equal to all political emergencies, and we may safely place implicit confidence in its energy and sagacity. I wish every member of this Society were also a member of that body.

A scientific society exercises a *higher* influence than a periodical over the Profession which they both represent; chiefly, perhaps, through the direct personal intercourse brought about by the former. But a periodical literature penetrates deeper into the professional body, and reaches those who do not care to exert themselves to join energetically in the work of a Society. The continued existence of the "British Journal" is evidence of its supplying a need in our professional life; and I, for one, shall look forward with interest to its anniversary number. Having subscribed to it from its beginning I shall have the opportunity of comparing this, the coming number, with the first. I confess I am

somewhat doubtful as to the present desirability of a fortnightly publication of a dental periodical.

But perhaps the subject of all others which possesses the greatest interest for us at this moment is that of the International Medical Congress, which is to be held in London at the beginning of August, and it must be a great satisfaction to us all that a section is assigned in it to Diseases of the Teeth. International Medical Congresses have been held at Paris in 1867, at Florence in 1869, Vienna in 1873, Brussells in 1875, Philadelphia in 1876, Geneva in 1877, and Amsterdam in 1879; the last being the occasion of the wonderful reception accorded to our great English Surgeon, Professor Lister. I have looked through all the records I could find of their proceedings, but have failed to find any notice of a Dental section. Obstetrics, Ophthalmic Surgery, Otology, Dermatology were all represented, but Dental Surgery seems ignored, and as though it had no existence. I confess to have been not a little surprised that our active and energetic brethren in America were unrecognised at Philadelphia, considering the great services they have rendered to dental progress. But it is with corresponding pride that I record the fact that, in our own country, our branch of surgery has, for the first time at these Congresses, received the official recognition of the Surgical body before the whole world. Nor need we fear a comparison of the names of our representatives with the names of the representatives of any other of the sections. And it only remains, therefore, that we should at once prepare to fulfil the duties and responsibilities of such a position. We may rest assured that our proceedings will be closely scanned by the entire Dental world, and by no small portion of the Surgical Profession. Let us see to it, therefore, that our action on this, to us, momentous occasion, shall be worthy of the position we take up, and of forming a precedent for guidance and imitation at all future Congresses. No definite and final arrangements have as yet

been made as regards the proceedings of the different bodies connected with the Congress. Your Council will be careful that the Odontological Society, as the chief Dental Society of this country, shall play its proper part when the time comes.

And now, Gentlemen, I will only detain you a few minutes longer, and I should like to occupy those in making a few remarks upon a subject which has interested me for some time, namely, the embryonic origin of the dental tissues. I think there are some here this evening whom I have had the pleasure of meeting on another occasion—a somewhat more anxious one than the present, perhaps, while it lasted, although, generally, very agreeable in its termination—and they may possibly remember that I used, now and then, to seek for information on this subject with varying but usually satisfactory results. The enamel is, of course, of epiblastic origin; the dentine pulp is derived from the mesoblast; and as it is for the permanent dental pulp that I wish to request your especial attention, I have asked Mr. Walsham—who is well known in connection with Embryological studies—to prepare a short series of diagrams illustrating the development of the Mesoblast at about the time of the junction of the mouth with the foregut. Mr. Walsham has been good enough, also, to make several others; but I think these will suffice for the present purpose. And I am not without hope that Mr. Walsham may be prevailed upon, when he is a little more at leisure, to give us a short course of lectures upon this subject.

In order to make matters clearer the layers of the blastoderm are coloured thus—

The Epiblast .. .. Green
The Mesoblast. Axial or undivided part. Purple. } Somatopleure Red; Splanchnopleure Blue
The Hypoblast .. .. Yellow

The first diagram shews a transverse section of the Embryo; (and you must kindly understand that these are purely diagrammatic, and are not intended to represent with absolute

accuracy any particular day and hour of development.) The cavity of the Amnion is completely enclosed by the Somatopleure, and the umbilical vesicle by the Splanchnopleure; the neural canal is completed and enclosed by the axial mesoblast, the roots of the spinal nerves are represented as epiblastic on one side, and mesoblastic on the other, their nature being now in dispute. The muscle plates, the notochord (which having been declared both mesoblastic and epiblastic is now said by a recent observer to be hypoblastic), the aorta and the Wolffian ducts and bodies are also shewn.

No. 2 represents a longitudinal section of the embryo: the vertebral column is shewn traversed by the notochord, the vertebral spines above the neural canal, the skull and the nervous matter of the brain and spinal cord; the heart, the Wolffian body, and the intestine, the foregut being still closed at its cranial end.

Nos. 3 and 4 represent a small part of the embryo, showing the point where the mouth with its epithelial lining of epiblast joins the foregut with its epithelium of hypoblast, coincidently with which junction some very interesting and mysterious processes take place in regard to the notochord, the pituitary body and the infundibulum.

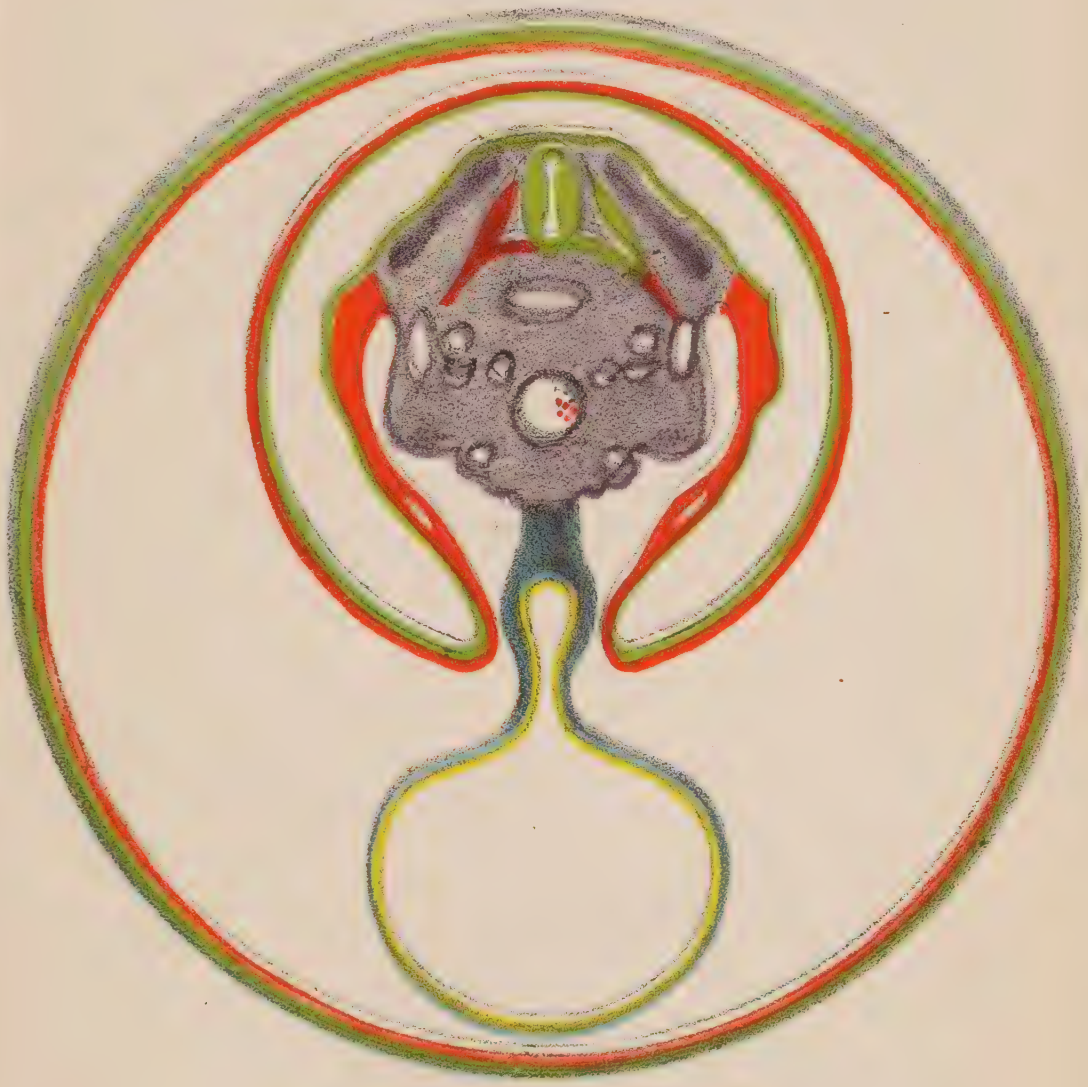
No. 5 shows the mouth, with the tongue, and the dental organ developing in the mucous tissue on the maxillæ.

QUAIN at p. 684 of his last edition says: "The following is the general relation of the several germinal layers to the production of different systems and organs of the embryo and its accessory parts, in so far as yet discovered.

"1. From the epiblast proceed the epidermis and its appendages, the great nervous centres, and the principal parts of the eye, ear, and nose; one layer of the amnion and yolk-sac; and in mammals, probably the outer layer of the permanent chorion.

"2. From the hypoblast proceed the epithelial lining of the whole alimentary canal (excepting that of the mouth) and

Fig. 1.



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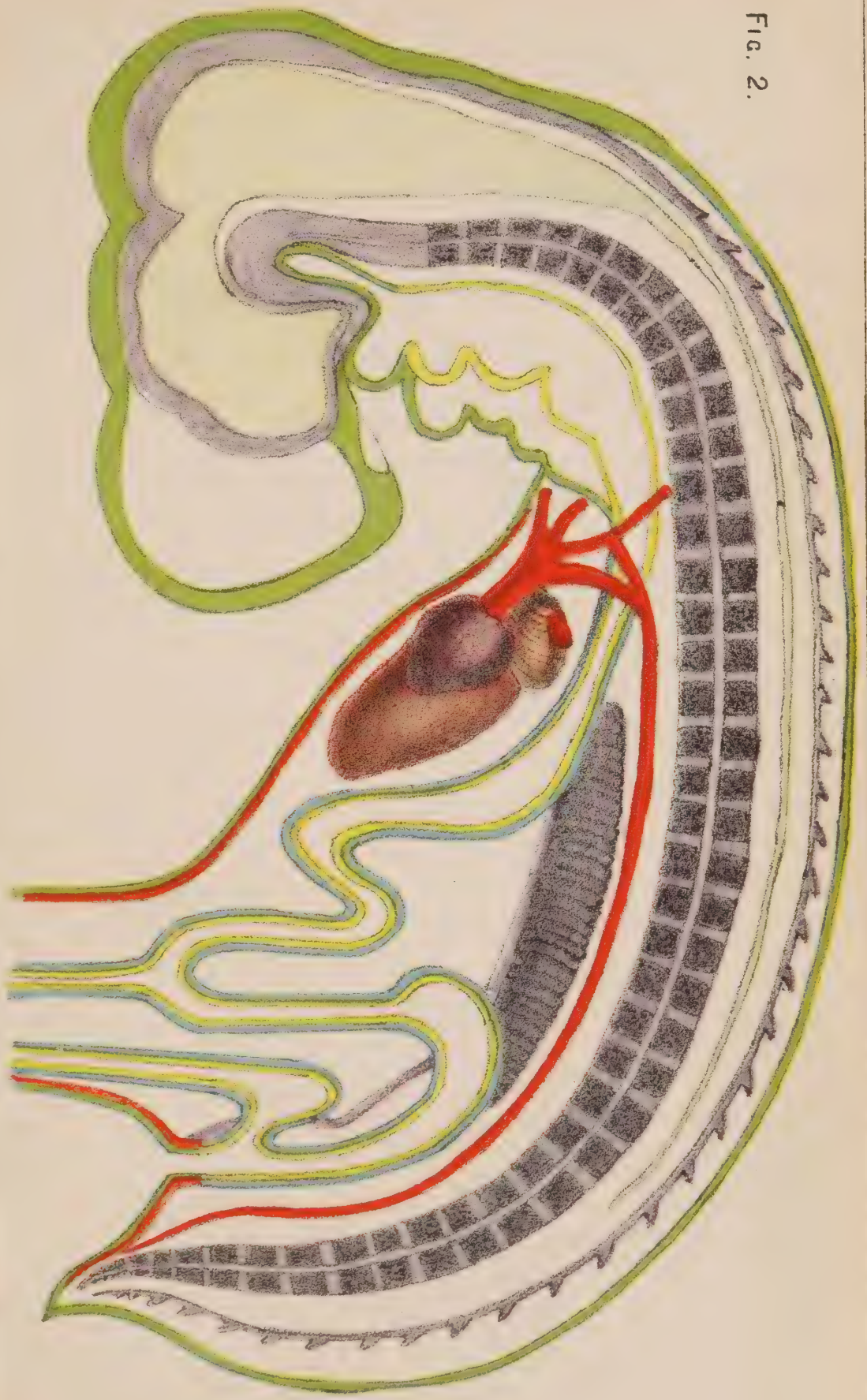

FIG. 2.

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Fig. 3.

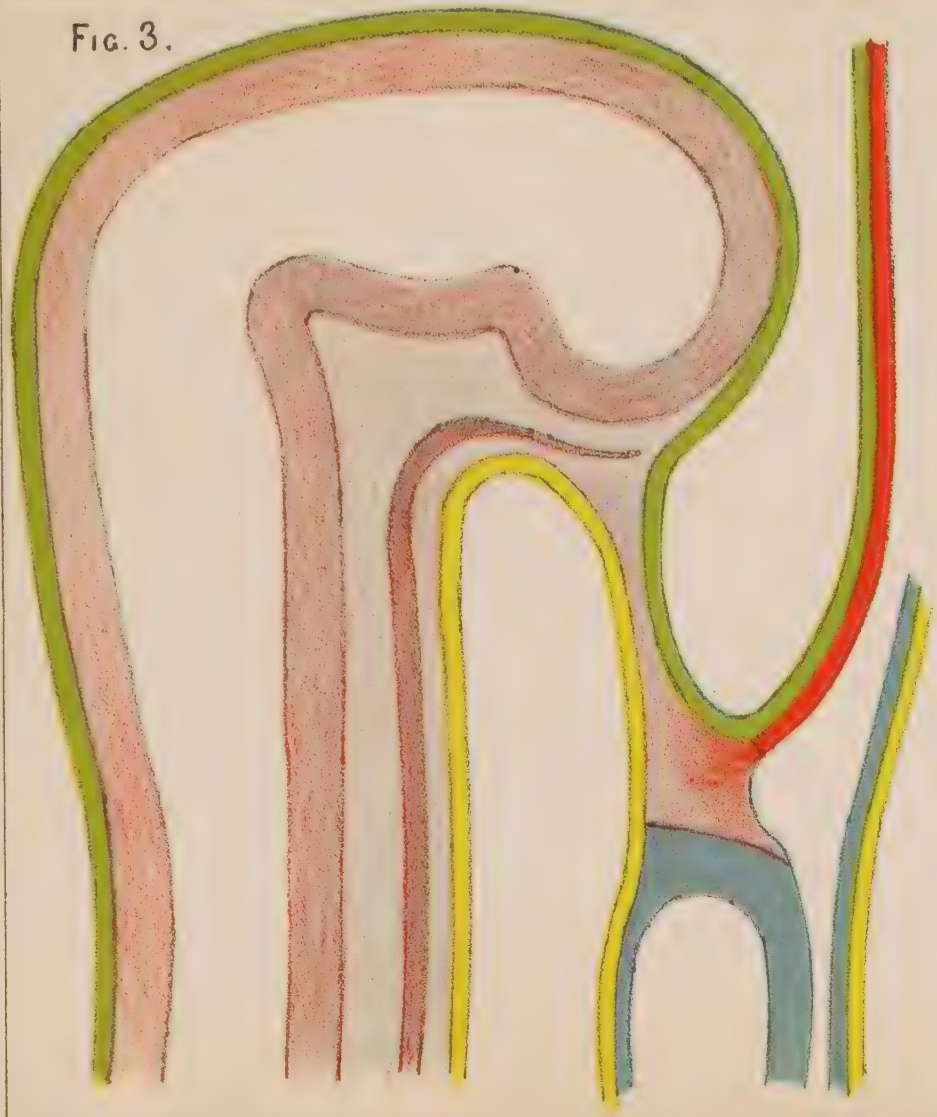

Fig. 4.

To face p. 72.

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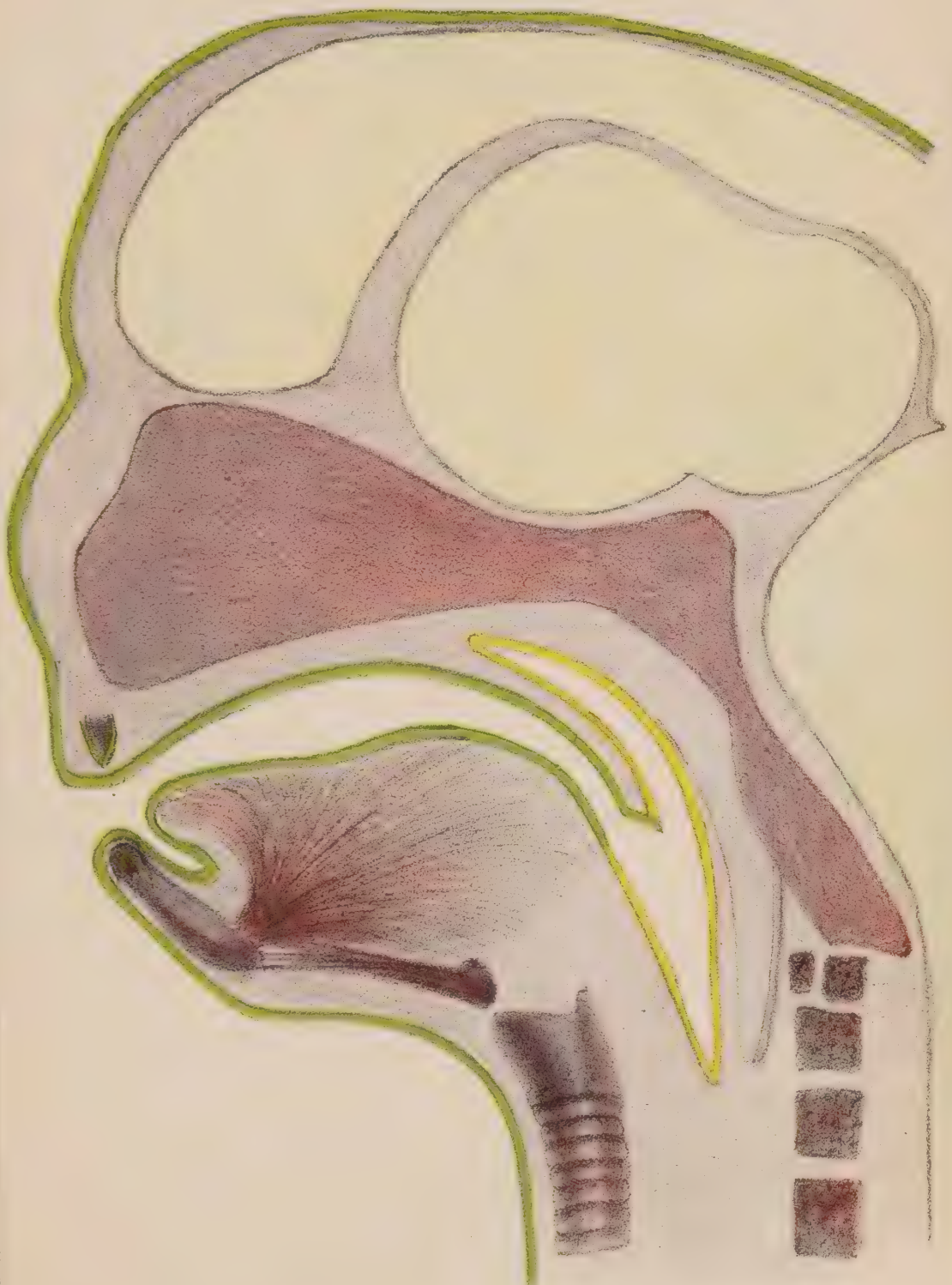
FIG. 5.



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of the lungs, the epithelial lining of the ducts of the glands connected with the alimentary canal, and also the deep layer of the yolk-sac and allantois.

"3. From the mesoblast proceed in general all the parts of the skeleton, the muscles, fasciæ, and tendons, the peripheral nerves, the true skin, the connective tissue, the vascular system and blood, the muscular and fibrous coats of the alimentary canal and all other visceral passages, the serous membranes, the parenchyma of many glands and the genito-urinary system, together with the outer layer of the amnion, the vascular layers of the yolk-sac, the allantois and the chorion, and the fœtal part of the placenta. The mesoblast does not, however, serve as the basis of these very various parts indifferently or equally throughout its whole extent, but in the following divisions, viz.: First by a central mesial or axial part, out of which proceed the rudiments of the proto-vertebral segments of the body, and, second, by two lateral parts which undergo sub-division into an upper and lower lamina; the first of these sub-divisions containing the rudiments mainly of volunto-motory parts, the walls of the body or somato-pleural elements; and the second forming the involunto-motory parts, as in the walls of the alimentary canal, heart, &c., or splanchno-pleural elements; the space formed by the separation of these two sets of parts is the visceral or pleuro-peritoneal cavity."

It is probable that the following tissues are derived from the uncleft mesoblast:—The dermis of the skull and its appendages; the bones of the skull and some of the soft parts connected with them, and among these the mucous tissue and the dentine germ arising therein; the spinal column; the cranial nerves (optic and olfactory excepted). The white matter of the brain and spinal cord, and the roots of the spinal nerves, perhaps, but these are under recent examination. Some parts of the Eye:—as the Capsule of the Lens, Suspensory ligament, Sclerotic, Choroid, perhaps the Vitreous

humour. Some parts of the Ear:—all the tissues of the Osseous Labyrinth; the Corium of the Membranous Labyrinth. The muscles of the Tongue. The muscles of the Back; perhaps those of the Limbs. Perhaps also the Wolffian body and duct, and the parts derived from them. The dentine germ being thus developed in the mucous tissue in connection with the bones of the face is, therefore, derived from the axial or uncleft portion of the mesoblast before it separates into the Somatopleure and Splanchnopleure.

I will now ask you to bear with me a very few moments whilst I mention my reason for drawing your attention to this subject. For some years past I have had an idea—I cannot call it a theory, because that would imply I had given more time and study to it than has been the case—that possibly the treatment of the different organs and tissues might be studied in connection with their embryonic origin. I might perhaps express it as the study of the morphological treatment of disease. It seems to me to be not altogether unreasonable to suppose that the tissues and organs which have the same physiological history may be liable to like pathological affections, and may possibly be amenable to similar remedial treatment. I have on more than one occasion in past years intended to suggest this at our discussions, especially perhaps on the occasion of a paper by Mr. Henry in the early part of 1876, but I am not very ready in putting my ideas into proper form when speaking without premeditation, and I doubtless failed to express my meaning.

This is a mere suggestion of mine, and I must apologise for venturing to present it to you in so crude and immature a form. And I very much regret my inability to study the subject more deeply, so that I might put it before you with more to recommend it. In truth I had intended to work it out more fully for the International Medical Congress, but one's time is so occupied, and the mind so pre-occupied with the pressing every-day work of life, that but little opportunity

is afforded for the prosecution of studies requiring leisure and concentration, and I am obliged most reluctantly to relinquish it. My suggestion may indeed be so fanciful, that it will go the way of all visionary ideas, and speedily be forgotten; or possibly some of our younger members may feel inclined to take it up as a recreation for their spare time. Five and thirty years ago, I should have done so, hoping that it might perhaps lead to some practical result, but pursuing it also as a means of disciplining and elevating the mind—inspiring care and reverence for Nature's work—and teaching the grandeur of a Profession, to which are entrusted the study and guardianship of the marvellous structures constituting our frame.

The PRESIDENT then announced that the following gentlemen had been duly nominated, and would be balloted for at a subsequent meeting :—

JOHN ACKERY, M.R.C.S. and L.D.S., Eng., 24, Queen Anne Street, Cavendish Square, London.

MARCUS J. DAVIS, L.D.S., Eng., 26, Finsbury Square, London, and J. O'DONAGHUE, of Monte Video.

The following candidates were then balloted for and unanimously elected members of the Society :—

W. H. WILLIAMSON, M.D., Aberdeen, Union Terrace, Aberdeen, and—

H. P. FERWALD, L.D.S., Ireland, Promenade, Cheltenham as non-resident member, and—

W. SCOTT THOMSON, L.D.S., Eng., 77, Denmark Hill.

STANLEY COOK, L.D.S., Eng., Castlenau Villas, Barnes, Surrey.

FELIX H. WEISS, L.D.S., Eng., Montague Place, W.C., and—

WILLOUGHBY G. WEISS, L.D.S., Eng, Montague Place, W.C., as resident members.

MR. COLEMAN showed two upper temporary canines with bifurcated fangs, also another specimen of the same tooth in which the root was deeply grooved on each side, and showed a tendency to bifurcation at the apex. Since these teeth were seldom extracted until the root had been more or less completely absorbed, it was not often that an opportunity was afforded of examining it; possibly therefore, the irregularity now shown might be more common than had been supposed.

With regard to irregularities in the roots of the permanent teeth, the most common deviation from the normal form was to find an upper third molar with four fangs; the next most common irregularity was a lower first molar with three

fangs; after that came lower canines with two antero-posterior fangs, and then an upper-bicuspid with three fangs. Further than that he would not venture to go, but he believed that the rarest example of this class was a lower bicuspid with two fangs. The tooth he now handed round was extracted from the mouth of a female, at the Dental Hospital. It occupied the position of the second bicuspid, but as all the teeth behind had been lost, there might possibly be some doubt as to what it really was. He thought, however, that those who would take the trouble to examine it carefully, would agree with him, that it could not be a retained second temporary molar, or a first permanent molar, and that in fact it would not be anything but a bicuspid, although it had two divergent fangs.

As to the mode of development of the fangs, dental literature was almost silent; the description of tooth development generally terminated with the completion of the crown. At this stage the odontoblastic layer, or membrana eboris, might be compared in form to a paper bag. If but one principal vessel ran up to the pulp, the membrane on further development became contracted round it, until it terminated in the apex of the root. And where two or more principal vessels existed, contraction took place around them in like manner, the membrane being drawn in, and meeting between them, thus forming separated fangs.

Mr. Hutchinson showed an upper bicuspid with three fangs which had been presented to the museum by Mr. Brindley, of Sheffield. He considered that the specimen had come to hand very opportunely, in connection with Mr. Coleman's remarks.

Mr. Chas. Tomes showed a first upper molar which had been sent by Mr. Tod of Brighton. Being very carious, Mr. Tod extracted it, and then found on the anterior surface of the neck, below the level of the ordinary enamel, a small enamel nodule, while matching it on the posterior surface was a similar nodule. On looking at the anterior surface of the second molar, which was still *in situ*, another enamel nodule

was found occupying the same position. The symmetrical production of these nodules was very curious.

Mr. Tomes also showed a portion of an elephant's tusk, the section showing a rough-walled cavity surrounded by large deposits of secondary dentine. In this cavity a bullet had been found lying loose. The animal had evidently been shot at, the bullet lodged in the tusk, where it had set up irritation and had been the cause of this excessive formation of secondary denture.

He also showed some specimens of Mammoth ivory. These animals, which had been extinct for probably a great number of years, were still occasionally found preserved in the ice cliffs of Northern Siberia in so perfect a condition that the character of the skin and colour of the hair could be distinguished; the stomach had even been found entire, and containing fir cones. In such specimens the tusks especially were found in good condition, scarcely differing from fresh ivory. But others had been more exposed to the weather, had been washed about by floods, and had undergone partial disintegration. On looking at a transverse section of one of these tusks a great number of interglobular spaces would be seen, arranged in contour lines. After long exposure, the tusks became broken up, the fractures following the course of the interglobular spaces, and presented the appearance seen in the second specimen.

Mr. Hunt (Yeovil) said that a writer in an American journal he had been reading lately, speaking of a case in which great absorption of the alveolar process had taken place, said he had been obliged to resort to the old-fashioned device of spiral springs. Similarly he supposed that some of those present were occasionally obliged to resort to the old-fashioned device of tube teeth and had found it a difficult matter to countersink the tube. He had lately met with a little instrument which answered admirably for this purpose. They were some diamond drills sold by a Mr. J. S. Glen of 370, King's Road, Chelsea. They were composed of the ordinary black diamond mounted on split iron wire, and were made of various sizes to drill holes of from $\frac{1}{32}$ to $\frac{1}{8}$ inch in

diameter. They were very cheap, 1*s.* 1*d.* including postage—and as proof of their efficiency he might state that, after fitting one to a lathe chuck he drilled a hole, first through the bottom of a thick glass tumbler and then through one of Messrs. Ash's long molars.

Mr. Coleman said he thought they might be adapted for use in the mouth. It was often difficult to make a hole through the enamel with a steel instrument—it was apt to slip. He thought that when it was necessary to drill into the pulp cavity, one of these instruments would be useful to make a commencement.

Mr. Hunt said he scarcely thought that the rectangular form of the crystal rendered it suitable for cutting enamel or dentine, but he had found it very useful for such purposes as he had already indicated.

Mr. Isidor Lyons read notes of a case of swallowing artificial teeth. The patient, a man aged 30, went to bed wearing his artificial teeth: during the night he suddenly awoke with a choking sensation and found that his false teeth had gone. He concluded that he had swallowed them and at once went to a neighbouring doctor, who passed a probang: the patient felt something move and for the time was relieved. The doctor then gave him some castor oil and sent him home. But on lying down again, the patient felt worse and at 5 A.M. he was brought to St. Bartholomew's Hospital. On admission he complained of pain in the neck just above the upper border of the sternum, and could not swallow without much pain and difficulty. No attempt at removal was, however, made until the following day, when Mr. Thos. Smith, having first felt the plate with an ivory headed probang, succeeded after several attempts in seizing and extracting the plate with a pair of long œsophagus forceps.

After the operation the patient was able to take liquid food without much difficulty, and a week afterwards he was discharged quite well.

Mr. Weiss said his investigations had shown that these cases were of more frequent occurrence than most people had

any idea of. There was no specially interesting feature in this particular case.

Mr. Coleman said he thought the use of the probang in this case was unwise: it certainly added to the difficulties of the case. It should be used only as a last resource.

Mr. Hutchinson said that in a case he knew of, the medical man who was called in ordered the patient to eat twelve penny buns.

Mr. Weiss remarked that the best treatment in such cases was to cut up some worsted into short lengths, stir this into thick oatmeal porridge and give the patient plenty of it. The worsted became entangled with any sharp points about the plate and covered them, thus greatly lessening the risk of injury to the stomach or intestines. The administration of castor oil, or any purgative medicine, was the worst thing to do.

Mr. Chartres White said a lady patient of his once came to him in a great state of anxiety on account of having swallowed her false teeth. They were on a long narrow plate which was fixed on each side by rigid wires. He ordered her to eat plenty of suet dumpling and new bread, and two days afterwards the plate passed per anum without causing any damage.

The President said that although there might be nothing remarkable about this case, still he thought that it was as well that attention should be drawn to the frequency of this accident occasionally, else the subject was apt to be forgotten.

Mr. Percy May showed a model of the upper jaw of a patient aged 21 presenting the following peculiarities. The laterals and bicuspids were absent, whilst a temporary molar was still in place on each side. That on the right side was decayed and was loose and painful, so Mr. May extracted it. On probing he could not detect any tooth beneath. The patient had nine sisters and a brother; the mother of the family and one sister had the same irregularity.

The Secretary showed an old-fashioned lower denture

which had been sent up by Mr. Paxton Harding of Carnarvon. It had been accidentally broken and had been very ingeniously repaired by the wearer. Mr. Harding sent also an upper wisdom tooth united to the second molar and several other specimens.

Mr. F. Canton said he had lately been consulted about a child $6\frac{1}{2}$ years old, who although very intelligent, understanding what was said to him, and making himself understood by signs, could not speak. On one occasion, when about three years old, he had spoken one or two words, but could never be got to repeat them. There appeared to be nothing wrong in the mouth, his teeth were all right, there was no tongue-tie, his palate was a little high, but not markedly so. There were several other children in the family, and they all spoke at the usual age. He had not suffered from any severe illness, or from any fright. The only other peculiarity about him was that he was very bad tempered. Mr. Canton had mentioned the case in the hope that possibly other members might have met with similar cases, and might be able to give him some information as to the probable cause of this aphasia; was it due to some brain deficiency? and what prospect was there of his acquiring the faculty of speech as he got older?

The President said that as he had heard that there was at the Foundling Hospital a child similarly afflicted, he had written to the surgeon to that institution for some particulars, and he had sent the following:—"The boy referred to is now nine years old, he is rather small for his age, but is fairly intelligent, and very well behaved. He has been in London four and a half years; when he first came to the school he could hardly articulate at all, but has gradually improved since. He has a narrow arched palate; tonsils are slightly enlarged; tongue freely mobile. He pronounces labials well, gutturals fairly, but palatal sounds very imperfectly. He pronounces c as she; f at the back of the palate, like open e; h like ai; s at back of palate; v like b; x at back of palate, and z as shed." The case was not

quite similar to Mr. Canton's, still it was interesting; perhaps Mr. Woodhouse could state something more about it?

Mr. Woodhouse said his attention had never been called to the case, he could therefore give no information. He should, however, certainly inquire about it at the next opportunity, and if he could discover anything worth reporting, would bring it before the Society at another meeting.

Mr. Hunt said these cases were rare, and very interesting. He had had a similar one brought to him, a girl eleven years old. He could only hold out the hope that an improvement might take place at the time of puberty.

Mr. Hutchinson said he knew of a family of four children, not one of whom talked till they were between four and five years of age, yet they were all bright and intelligent children. One of them, a boy now four years old, could only just say a few words.

Mr. Stocken related the case of a gentleman between 60 and 70 years of age, who had for years past been subject to calculous formations in the pharynx. Several had been removed; in the centre of one, a pear pip was found. The one which Mr. Stocken removed, was about the size of a pea, it was lodged in a small cavity in the wall of the pharynx, with only a minute opening. It had been the source of great local irritation and discomfort. After removing it, Mr. Stocken took great pains thoroughly to syringe out all *débris* from the cavity, thinking that possibly the recurrence of the formation might have been due to the neglect of this precaution on previous occasions.

After proposing a vote of thanks for the numerous casual communications, the President announced that at the next meeting, Mr. Chartres White would read a paper on the "Histology of the Gustatory Organs of the Tongue," and that Mr. Stocken had promised a paper for the April Meeting.

The Meeting then terminated.

JOHN TOMES F.R.S.

Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING.

March 7th, 1881.

THOS. A. ROGERS, Esq., President, in the Chair.

The minutes of the previous Meeting having been read and confirmed,

Mr. Adolphus B. Alexander signed the Obligation Book, and was formally admitted to membership by the President.

The President announced that Mr. William Murray Parson, L.D.S.I., of Great George Street, Bristol, had been duly nominated and would be balloted for at a subsequent meeting.

Mr. Jas. Parkinson said he was one of those who believed in the value of amalgam when properly used. But in order that it should succeed it was necessary that the cavity should be carefully prepared and dried, and that the amalgam itself should be packed dry and thoroughly condensed and polished. He had found that it was sometimes very difficult to carry amalgam to an awkwardly situated cavity on a back tooth without getting it wetted, and he had therefore devised some instruments for this purpose which he had found very useful, and he thought that some of his friends might possibly also find them of service if they would give them a trial.

Mr. Charters White said he felt sure Mr. Parkinson's forceps only required to be known in order to be generally used. Only a few days previously he had been called upon to fill a cavity in a left upper wisdom tooth for a lady with a

very small mouth, and he experienced very acutely the difficulty of which Mr. Parkinson had spoken; he only wished he had had the forceps at that time.

Dr. Walker exhibited models showing what might be done in correcting an irregularity of the dental arch by three weeks' treatment with daily supervision. The patient, a young lady, was brought to him two years ago: the upper permanent centrals had erupted under the nose, and there were two supernumerary teeth dividing the centrals from the laterals. These were removed and attempts were made to improve the dental arch by means of wedges, &c., but the patient, who lived in the country, attended very irregularly and little good was done. At last he intimated to her friends that he must decline any further treatment of the case unless the patient could come and live near him and would present herself for inspection every morning. These terms being agreed to, he fitted a vulcanite denture with circular bar external to the teeth, resting on the external alveolar ridge; the irregular teeth were attached to this by ligatures which were readjusted daily. A decided improvement was apparent almost immediately, and the case had since progressed most satisfactorily.

Mr. Betts showed some temporary and permanent canines with abnormally bifurcated roots similar to those exhibited by Mr Coleman at the preceding meeting.

Mr. Chas. Macnamara exhibited a patient under his care in the Westminster Hospital, from whom he had removed a portion of the upper jaw for a sarcomatous tumour.

Mrs. M——, aged 51, was admitted into the Westminster Hospital on the 29th of January; her family history is good; there is no evidence of cancer or any other form of hereditary disease. Mrs. M—— has suffered severely from toothache, almost all her teeth have been extracted; about fourteen months ago (without any assignable cause) she noticed that the gum of her right upper jaw became swollen, and from that time up to the date of her admission into the Hospital the affected part of the jaw continued to increase in size. There

was very little local pain in the part, but during the past three months she has suffered from excessive neuralgia of the right lower lid and the side of the nose; it was in consequence of the severity of this pain that she applied to the Hospital for relief.

On admission it was found that the patient's right cheek was considerably swollen in consequence of a firm, solid tumour, which occupied the alveolar process of the right superior maxillary bone. The tumour did not extend as far back as the soft palate, nor did it protrude into the nasal or orbital fossæ. Mrs. M—— was clear as to the comparatively rapid increase in the growth of the tumour during the past few months. There was no enlargement of either the parotid or cervical glands.

On the 5th January, the patient having been placed under the influence of chloroform, I made an incision through the upper lip, along the right alæ nasi and across the cheek to the malar bone. With a Hey's saw the alveolar process of the jaw to the right of the symphysis was divided. I sawed through the nasal process of the superior maxilla and malar bone, and completed the separation of the tumour with bone pliars. The wound was plugged with lint, and its edges brought together with silk sutures.

I need not follow the history of the case; you have seen the condition of the patient to-day (two months after the operation), the lines of incisions are fast becoming obliterated, and she has less disfigurement of the face now than she had before the operation.

Before undertaking this operation, the first point we had to consider was the nature of the tumour, and how far we were justified in recommending the patient to submit to a proceeding of this kind.

From this cast of the tumour taken by my friend Dr. Walker, you observe that the alveolar process of the upper jaw on the right side is enlarged equally in all directions; this, together with the painless growth of the mass, made me at first suspect that this might be a dentigerous cyst; it was true the patient was fifty years of age before the tumour commenced

to grow, but that fact did not exclude the possibility of its depending on an undeveloped tooth. The walls of the tumour did not yield on pressure, there was no evidence of the growth being cystic, but it was of a comparatively small size, so that if it were a dentigerous cyst at that early period of its development it would not be likely to contain sufficient fluid to enable us to detect its presence without puncturing the mass. Dentigerous cysts of the upper jaw commencing when a person is fifty years of age are rarely met with as compared with osteo-sarcomas growing in this locality. For instance, cases of epulis are common, and by far the majority of them commence in the deep layers of the periosteum in connection with the decayed stump of a tooth.

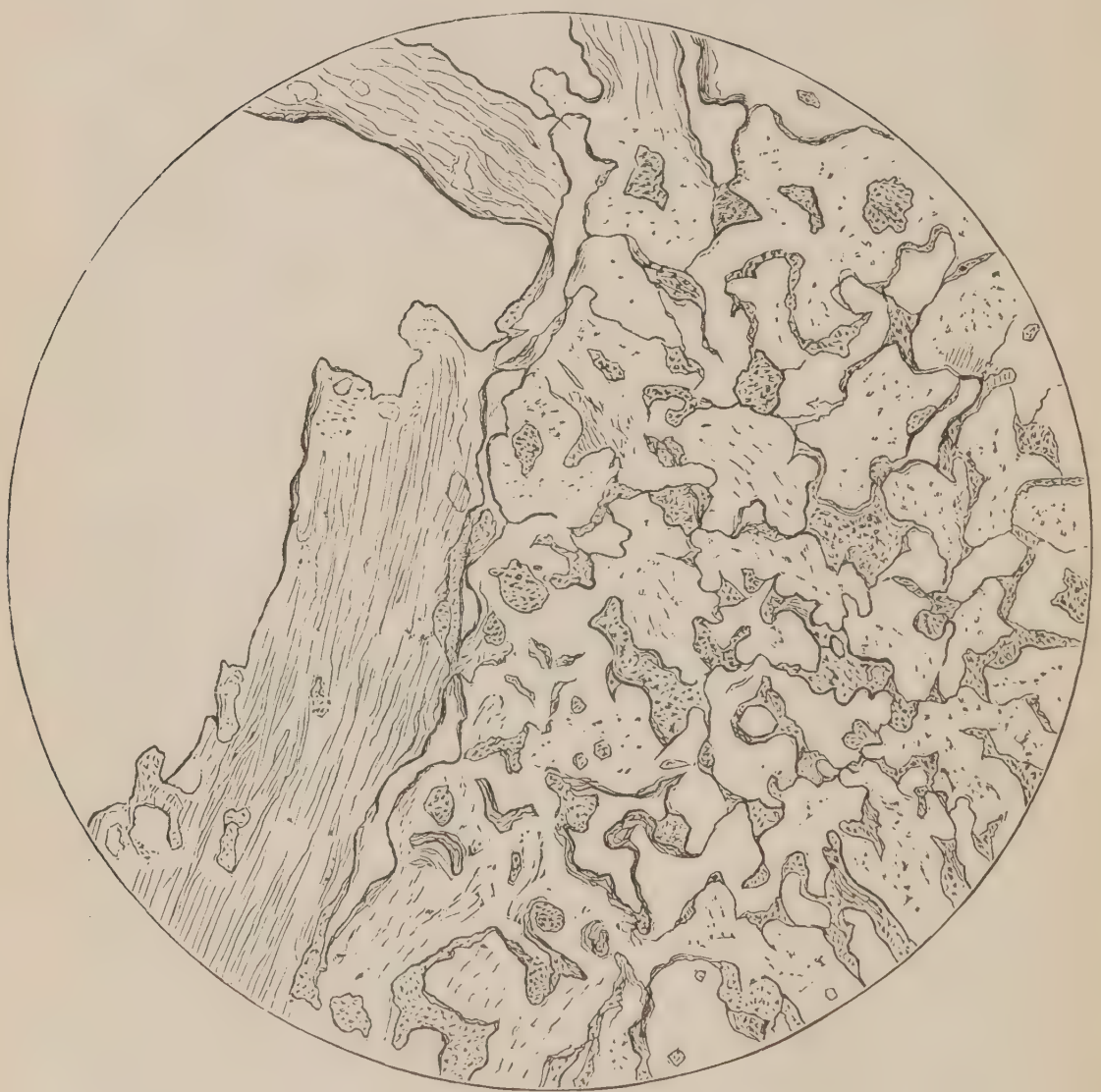
Now what do we understand by an osteo-sarcoma? My belief is that tumours of this kind arise from a morbid growth of the normal elements of the affected tissues, that these elements in place of orderly and natural development revert to their embryonic form. We know that the cancelli of the bones are filled with soft tissues called medulla, this medulla of bone and also the deeper layers of the periosteum are largely derived from the cells of temporary cartilage. This temporary cartilage again is the outcome of a mass of cells which is as nearly similar in appearance (during early embryonic existence) to the soft portions of the tumour now before us as any two structures can be. My conviction is, that changes have occurred in the medulla of the bone surrounding this tooth, changes due to the presence of the tooth, which has altered the conditions under which the medulla normally exists and performs its function of repairing the natural disintegration of the bone; the healthy surroundings of the medulla having been interfered with, it has been unable to accomplish its purpose in life, and it has reverted to its embryonic condition. The process is somewhat analogous to the changes we see going on in the vegetable world; it requires a botanist to recognise some of the flowering trees and shrubs transported from a northern to a tropical climate, the surroundings of the plant being altered, they assume peculiar characters. And so unless we study the appearances of the embryonic tissues we

cannot, I think, comprehend the characters of tumours such as those we are now considering.

We are compelled at times to work on theories of this kind to enable us to arrive at practical results, and it was upon this theory my practice was guided in this particular case. I believe this tumour was simply a perverted growth of the normal elements of the part, but I knew that as the mass increased in size it would soften, and portions of it might then be carried by means of the blood to the lungs or internal organs of the body, and growing there destroy the patient. On the other hand, I felt sure if I could remove the growth before any such changes had occurred, that with the exception of the loss of the bone my patient would suffer, she would run but little risk from the operation. The result demonstrates that my diagnosis was correct, the entire growth has been removed, and we see the sarcoma is limited by healthy osseous tissue, and by a membrane beyond which it has not as yet extended.

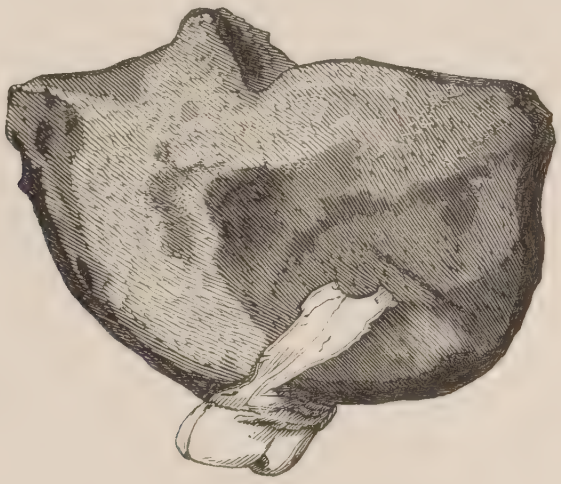
The practical lesson I would draw from the circumstances of this case is, if you meet with a patient affected with a tumour of the jaws such as the one now before us, which has perceptibly increased in size within three or four months, and from its position, and conformation, you have reason to believe it is a sarcoma, it is your duty at once to remove the alveolar process in which it grows. If you are in doubt as to the nature of the growth, it is well to drill into the mass before resorting to excision of a portion of the bone. But osteo-sarcomas as they increase in size usually contain cavities, therefore, the mere presence of fluid in a tumour does not prove it to be of cystic origin. On the other hand, if the tumour you have to deal with has not increased in size for some years, and causes the patient no great uneasiness, by no means interfere with it. I have here the cast of a young gentleman's mouth taken for me by Dr. Walker in October, 1877; you see the position of the morbid growth is not very unlike that of Mrs. M——: but in this latter case the tumour had commenced when the patient was a lad, and it is his belief that for seven years prior to 1877 it had not grown. Since that time I have seen

this gentleman from time to time, and satisfied myself that the tumour has not increased in size; it is in fact a sarcoma that has undergone ossification, for if the morbid action which has excited the diseased growth of the affected tissue subsides the



cells of the medulla may resume their normal functions, and ossification of the tumour takes place, under which circumstances we can hardly do better than to leave well alone. In conclusion I would direct your attention to these

sections of the tumour removed from Mrs. M——'s jaw, the one section put up in spirits of wine you would say was a specimen of a fibrous or osseous growth expanding the alveolus of the jaw; in the other section prepared in chloral and glycerine we see that the root of the tooth is surrounded by soft sarcoma, which expands the alveolar process of the jaw. The beautiful microscopic specimens before you demonstrate the fact that the medulla of the bone is replaced by round-celled sarcoma.



Mr. Butlin said he would not enter upon any discussion as to the nature of sarcoma or the place which it should occupy in a classification of morbid growths. But there was one remarkable feature about this particular case which Mr. Macnamara had not referred to, and to which he should venture to direct their attention. On examining the tumour under the microscope, there were found in certain parts a number of small round or oval bodies, not strictly regular in shape, sometimes two or more were fused together; they were homogeneous and highly refractive, contained no nucleus, but were marked on the surface with slight parallel lines concentrically arranged; tests showed that they were composed of calcareous matter. Mr. Butlin only knew of three cases in which they had hitherto been found, and these were all tumours of the *lower* jaw, and all

occurred in *young* subjects. It was probable, as Küster had pointed out, that they were in some way connected with the presence of the teeth, but the nature of the connection was very uncertain.

Mr. Coleman said that with regard to the diagnosis of such a tumour as this from a dentigerous cyst, which as Mr. Macnamara had pointed out was not always very easy, he looked upon the presence or absence of *pain* as a valuable indication. Dentigerous cysts, at all events in the early stages, did not cause pain, whilst sarcomatous tumours usually gave rise to a good deal. This case reminded him of a patient who applied to him at the Dental Hospital some time since on account of having suffered extreme pain in the upper jaw on the left side. The mouth was closed and had to be opened under chloroform : it was then found that the third upper molar on that side was not erupted. Thinking it was one of those cases of retarded wisdom tooth which are so frequently met with, Mr. Coleman removed the second molar in order to make room for it. As this gave no relief the unerupted third molar was itself removed, but no improvement followed: then some roots were removed from the upper jaw, but still the pain continued. The patient also was evidently losing flesh, and at last, about three weeks after the first examination, a swelling became apparent in the neighbourhood of the extracted molars. He was now admitted into St. Bartholomew's Hospital; the tumour, which proved to be a sarcoma, grew with great rapidity; an operation was not thought advisable, and eventually the patient died, exhausted by pain and purulent discharges. Probably in this case the growth originated somewhere in the neighbourhood of the gasserian ganglion, and hence the suffering was unusually severe, but pain was almost always a decided symptom in these cases.

Mr. Chas. Tomes said that when examining the specimens on the table, he had noticed the calcareous bodies spoken of by Mr. Butlin. He had met with them before on at least two occasions in tumours in the mouth, and was not aware of their great rarity. One was a case of great hypertrophy of

the gums, and the other was an ordinary fibroid epulis. He was much struck with their exceedingly close resemblance to the bodies called calco-spherites which were produced under various circumstances when salts of lime were precipitated in the presence of organic matter.

What surprised him most in the specimen shown was that on tracing round the alveola-dental periosteum it appeared to be quite normal, although surrounded on all sides by the morbid growth of the sarcoma.

The PRESIDENT said the Society was much indebted to Mr. Macnamara for having brought before them this very interesting case. It was scarcely probable that any of those present would care to undertake the treatment of such a case, involving the performance of a somewhat formidable operation for its cure; but all ought to be able to recognise the nature of such diseases when met with, and therefore Mr. Macnamara's remarks and specimens were most instructive. He understood that this had proved to be a "round-celled" sarcoma; was it not generally considered that this indicated a stronger tendency to a malignant type than did the "spindle-celled" variety?

MR. MACNAMARA replied that with regard to the question of malignancy, he would rather be guided by the history of the case than trust to the microscopic appearances of the tumour. Malignancy depended quite as much upon the rapidity of growth and the position of a tumour as on its histological structure. Rapidity of growth was, especially, a most important element in forming an opinion on this point; such a growth as that mentioned by Mr. Coleman was malignant, no matter what its structure might be.

The PRESIDENT then called upon Mr. Charters White to read his paper on the Histology of the Gustatory Organs of the Tongue.

The Histology of the Gustatory Organs of the Tongue.

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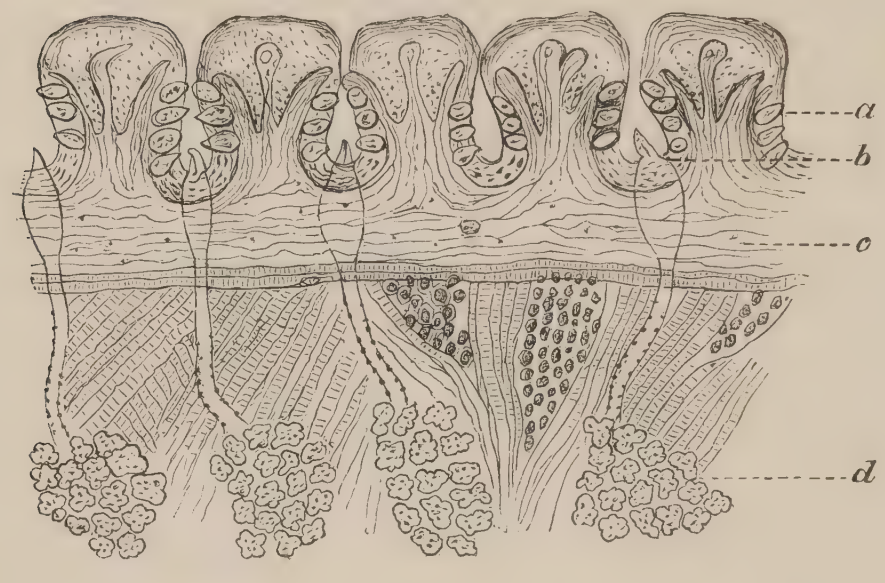

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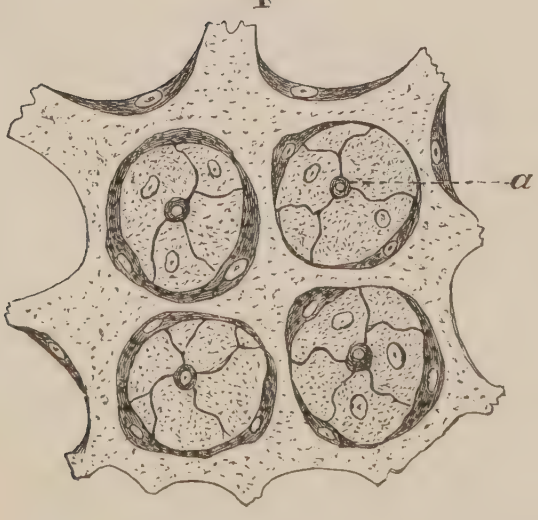

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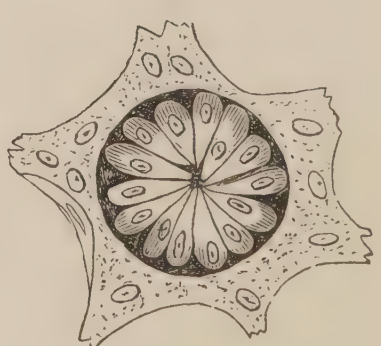

DESCRIPTION OF THE ILLUSTRATIONS.

FIG. 1.—A diagrammatic section cut across the course of the gustatory lamellæ, showing—

a. gustatory bulb.
b. punctiform papilla.
c. connective tissue with nerves.
d. linjual glands.

FIG. 2.—Isolated gustatory bulb.
FIG. 3.—Isolated investing cells.
FIG. 4.—Upper half of epithelial framework of gustatory bulbs.
FIG. 5.—A gustatory bulb exposed in consequence of the detachment of upper half of the epithelial framework.

(*After Engelmann.*)

IN offering a paper to such a Society as this, one fears that he may be presenting very little of novelty or interest in the subject he chooses. In the first place it is exceedingly difficult to select a subject that has not been worked out by other and abler men, and in this way has lost its claim to novelty. It is therefore with no small amount of diffidence that I ask your acceptance this evening of a few interesting details relative to those remarkable bodies known in histological anatomy as the gustatory or taste-bulbs. Though this subject may not be deemed by some as of a strictly dental character, yet it contains much that may interest practitioners whose province embraces the physiology of all parts of the oral cavity. Every student of anatomy will remember the three classes

of papillæ found on the dorsum of the tongue: there are the most numerous, the *conical or filiform* papillæ; then the next in number, the *fungiform papillæ* distributed in isolated individuality about the anterior portion of the dorsal surface; and then the fewest in number, but perhaps the most important, the *circumvallate papillæ*. It is with the latter that we are particularly concerned this evening, because it is in them that these taste-bulbs, of which my short communication treats, are chiefly found. Some histologists, notably Lovén, have found them distributed, though sparingly, in the fungiform papillæ of the rat, rabbit, calf, dog, and in man; but in the *papillæ circumvallatæ* they occur with such regularity and in such abundance, that it leads us to the conviction that these papillæ are their normal habitat. While the sections which I have the pleasure of submitting to your notice are taken from the gustatory patches of the rabbit's tongue, yet they so fairly accord with the characters common to those of man and the vertebrata generally, that we may safely accept them as types on which the gustatory bulbs are constructed in the majority of cases. Before proceeding to a description of these peculiar organs, it may be as well if I clear the ground by describing the locality where these gustatory patches may be found. On examining a rabbit's tongue we shall

find on each side of its base, and looking towards the ascending ramus of the inferior maxilla, an oval patch having a different colour to the surrounding tissues ; a closer examination of it will show it to be striated, made up as it were by ten or fifteen ridges ; if these patches are cut out of the tongue and hardened by any of the usual hardening re-agents, such as absolute alcohol, bichromate of potash solution, or osmic acid, thin sections may be cut at right angles to the course of these laminæ, and a clearer insight into their nature and structure gained thereby.

Such a section I have endeavoured to represent in my diagram (No. 1). By referring to that we shall notice a row of compound papillæ derived from offshoots of the connective tissue, and we must bear in mind that these papillæ seen here in section are in reality ridges of papillæ, some of which are forked at intervals, giving rise to secondary papillæ having furrows between them, and we shall see these furrows are so filled in by epithelium that no evidence of the subjacent inequality exists. The epithelial layer is considerably thicker on the summit of the papillæ, and on that portion of it which is not in approximation to its neighbour ; but on the sides where it is more protected by contact with the adjacent papillæ the epithelial layer is thinner, and it is in this situation that these gustatory cells are found. In

the sectional view presented by the diagram, only three or four of these "goblet cells" may be seen on each side of the papilla; these, however, represent only a portion of a belt of these gustatory bulbs, which extends three or four deep entirely round the ridge, so that in the sheep the aggregate number of the goblets has been estimated at 9,600; in the pig 9,500; and in the ox as many as 35,000; and if, as alleged, these minister to the sense of taste, we can readily appreciate the extent of surface furnished by this immense number. Before proceeding to a description of the minute anatomy of these gustatory organs, it will be as well if we take a brief glance at some of the adjoining tissues. Deep down below the connective tissue, and in the meshes of the network of muscular fibres of the tongue, are the lingual glands; they exist so abundantly that any section taken from the region immediately below these gustatory patches will present glandular structure in large quantities. By tracing the course of the numerous excretory ducts which emerge from these glands, we shall find that where they pierce the connective tissue their diameter becomes enlarged, and they each terminate in a punctiform papilla which opens at the bottom of the fossa formed by two adjacent papillæ. Scattered amongst the fibres of the connective tissue the cut ends of several fine nerves may be seen, these are

part of a plexus derived from the terminal branches of the glosso-pharyngeus, which, after supplying the pharynx, the tympanum, and Eustachian tube, enters the tongue at it base and becomes divided into two branches, one going to the upper surface and to the mucous membrane of the base, the other piercing the muscular structure and being distributed to the lateral portions of the tongue, and especially supplying the *papillæ circumvallatæ*. Of the ultimate termination of this nerve we shall see more in discussing the histological character of the gustatory bulbs.

The epithelium covering the papillæ affords an admirable demonstration of the mode of its growth and development, for where it adjoins the connective tissue of the papillæ it is globular for the first few layers, and afterwards becomes flattened in various degrees till it ultimately assumes the shape we are so familiar with in its squamous variety.

In describing the usual character of a circumvallate papilla, we observed that it was generally formed by a central offshoot of the connective tissue having a lateral offshoot on either side of it; these offshoots are merely the framework designed to support the capillary vessels and nervous fibrillæ, which traverse its structure in a course at right angles to the axis of the gustatory bulbs. These fibrils are pale and very difficult to trace,

but from analogous instances in some of the Amphibia, we may surmise that they end in brush-like filaments which become lost in the layer of epithelium.

Having now briefly glanced at the microscopical characters of the surrounding tissues, it remains for me to describe as clearly as I can the histology of these bodies, to which foreign observers have given the names of bulbs, goblets, flasks or cells, and which are supposed to aid, or even accomplish the function of taste, and therefore have been named *gustatory bulbs*. The nerve fibres last mentioned, under a high magnifying power, may be traced running up the lateral branch of the papilla, but not apparently diverging from their course to enter the base of these bulbs, and it is conceived that they do so in the proper fulfilment of their function ; but as in the connection between the exquisite pain we are all so familiar with in sensitive dentine, and the ultimate fibres of the dental nerve much obscurity prevails, so in this case the function of taste may be duly performed, but the media by which it is carried out may be difficult to demonstrate ; consequently we are still needing the thumb-screw and rack of re-agents, which shall wrench this secret from the inmost recesses of histological science. According to the researches of Engelmann, one or more fasciculi of nerves run up the axis of the papilla, whilst in

many instances they penetrate its lateral portion, and there breaking up into numerous fine and frequently decussating sinuous branches stream out towards the epithelium ; but as these branches contain many more pale than dark bordered fibres, it is extremely difficult to trace them into the gustatory bulbs. But let us examine one of these bulbs after it has been isolated from its adjacent tissues, and then dissecting its component parts we may obtain a slight clue to the course of this peripheral nerve fibre we are in search of. A section taken parallel to the lamellæ will probably cut off the upper portion or the neck, as we may call it, of one of these flask-like bodies ; upon looking into the upper half of the detached epithelial casing of this bulb, we shall perceive a small hole surrounded by epithelium through which the pointed neck of the flask projected, this is called the "*gustatory pore.*" An examination of the part from which this casing became detached will reveal the reason of these organs being called bulbs, the bodies of these organs presenting an appearance of a flower bud before it is expanded ; by breaking up this bud we can resolve it into its primary histological elements, an illustration of which I have endeavoured to give in Diagram No. 2. When such an isolated gustatory bulb is submitted to this examination, we shall find it composed of from fifteen to thirty

long narrow cells of a granular texture, and containing a large nucleus; these cells stand closely compressed round the axis of the bud, the outermost being more concentrically curved than the rows more interior to them. The cells of the most interior layer are of a different character to any of the preceding description, being highly organised and specially differentiated, in all probability they may be regarded as continuous with the terminal fibres of the glosso-pharangeus, and consequently the taste nerves of these gustatory cells. There is one feature connected with the histology of these cells to which attention should be directed. In examining a thin section of the gustatory organ as figured in No. 1 Diagram, a number of the flasks may be seen as if perforating the epithelial layer of the lateral surface of the papilla, and although this fact is difficult to demonstrate in most sections on account of their thickness, yet in such pieces that are cut so extremely thin that they break up and resist all endeavours to mount them permanently, it is in these pieces that we can see that the innermost layers of this bulb really pierce the gustatory pore, and protrude from its orifice a short and very fine hair-like process. A comparative examination of these organs in other animals, especially in the frog, furnishes us with such a constant recurrence of this histological element, that we are justified

in considering these hairs as important factors in the function of taste. I think I have said now all that I need in reference to the histology of these gustatory organs in the rabbit, for those who care to work out this very interesting subject as a solace to their leisure hours, I would refer them to Professor Engelmann's exhaustive paper as it occurs in Stricker's "Human and Comparative Histology," only warning them that, as I have done, they may probably examine several hundred sections of these gustatory lamellæ in working over Professor Engelmann's observations, and it will only be by collating the various results of their examination that they can arrive even at the imperfect views I have very imperfectly laid before you.

Discussion.

The President after thanking Mr. White for his interesting paper, and for the beautifully prepared microscopical preparations which he had presented to the Museum, asked whether it was supposed that these bulbs were the only means of conveying the perception of taste? It was generally held that this sense resided in the posterior part of the palate as well as in the tongue, and that it was conveyed to some extent through the lingual branch of the fifth nerve as well as by the glosso-pharyngeus; were these bodies found on the palate or in connection with the lingual nerve? It was well known that the use of an upper suction case interfered more or less with the perception of taste, and this had been supposed to point to the fact that we derived a considerable part of our information under this head from the palate.

Mr. Stocken said he thought that this impairment of taste was due to the irritation caused by the presence of a foreign body in the mouth. It was only temporary; the perception of taste being regained as soon as the tongue became accustomed to the new material with which it was brought into contact.

Mr. Gaddes thought that the physiological defect spoken of by Mr. Stocken was probably due to a want of association of function of the nerve of special sense with the nerves of common sensation. This was at all events a feasible explanation of the condition.

Mr. Coleman said he believed there was no doubt that the soft palate and fauces contributed to the perception of taste. He remembered hearing a very interesting paper by Mr. Arthur Underwood some two years ago on this subject.

He should be glad if Mr. White would inform him what was the diameter of the orifice of one of these flasks, and were they supposed to have any power of contraction or expansion such as would facilitate the access of sapid substances to the interior of the bulb?

Mr. F. H. Weiss remarked that few people had any idea how largely we were dependent on the sense of smell for our perception of flavours. It was a common experience that the power of tasting was lost when the nasal mucous membrane was affected with a cold. And any one might satisfy himself of the truth of what he had stated by merely clamping the nose with the finger and thumb and then attempting to discriminate tastes. Probably one-third of the flavours we perceived reached us through the sense of smell.

Mr. Hutchinson said there was no doubt a very intimate relation between the two senses. In eating the sugared violets and rose leaves which were now prepared, you had the idea that you were smelling the flower; it seemed to be tasting the smell and not tasting the taste. Would Mr. White be kind enough to inform him which was the best way of preparing for the microscope such sections as those

now shown so as to make the nerve fibres as distinct as possible ?

Mr. Hunt (Yeovil) remarked that it was a very interesting question to determine whether the impressions which we receive through the special senses were due to a chemical change set up in the nerve or to the effect of motion. With regard to the eye there seemed to be some probability that the rays reflected from an object caused a chemical change in the retinal cells, and that the phenomena of vision were in some degree similar to the changes produced by the actinic rays on the sensitive plate of the photographer. It was, for instance, a fact that a certain amount of *time* was necessary to produce perfect vision, just as a certain period of exposure was required in the case of the photographer's plate. With regard to the ear it was known that the effects were produced mechanically, that they were due to a vibratory motion communicated to the terminal filaments of the auditory nerve by the waves of sound. But with regard to the gustatory nerve it was still an open question whether the sensations were due to chemical or mechanical action, and it was a question which, however impossible to answer at present, was nevertheless an exceedingly interesting one.

Mr. Ibbetson said he remembered having a very interesting experiment practised upon himself some thirty-five years ago when he was attending the lectures of Dr. Margohn at Paris. A solution of bitter aloes was painted over his palate, care being taken not to touch the tongue, but he tasted nothing. He was then told to swallow, and directly the dorsum of the tongue came in contact with the palate he was at once fully conscious of the nauseous flavour. This experiment, which might be repeated by anybody, showed that the palate had not the sense of taste, but that it resided in the base of the tongue.

The President then called upon Mr. White for his reply.

Mr. White said he did not anticipate that his paper would give rise to such a physiological discussion. As a fact the

function of taste did not reside in the palate, but in the base of the tongue, and especially in the circumvallate papillæ. The glosso-pharyngeus was, at all events, the *chief* source of taste, and it was distributed to the base and side of the tongue and not to the tip. The orifice of one of the flasks measured about $\frac{1}{200}$ inch in diameter; the flasks themselves did not appear to possess any power of independent movement, but they were very mobile, and were no doubt affected to some extent by the action of the subjacent muscular tissue of the tongue. Osmic acid was the best re-agent for showing nerve tissue with which he was acquainted; he intended to try chloride of gold, but had no experience of it at present. It was not an easy thing to get these bodies to show well in sections: it was necessary to make several hundred sections in order to get a good idea of their structure.

On the motion of the President a cordial vote of thanks was given to Messrs. Macnamara and White and to the other contributors during the evening. The President then announced that at the next meeting Mr. Stocken would read a paper "On the value of certain remedies in the treatment of Neuralgia."

The proceedings then terminated.

Odontological Society of Great Britain.

SPECIAL GENERAL MEETING.

4th April, 1881.

THOS. A. ROGERS, Esq., President, in the Chair.

The President opened the proceedings with the following address:—

Gentlemen,

If the Post Office has done its work with its usual regularity, every resident and non-resident member in the United Kingdom will have received a summons to this meeting, held for the purpose of considering some proposed changes in our laws, and I now declare this a Special General Meeting for that purpose.

First you will see it is proposed—

> "That, on and after November 1st, 1882, candidates for the resident, non-resident, or corresponding membership of the Society shall not be eligible unless they practice as Dental Surgeons, or are interested in the progress of Dental Surgery, and are also Licentiates in Dental Surgery, or qualified Practitioners of Medicine or Surgery, or possess such a diploma or degree as, in the opinion of the Council, will qualify them for the membership of the Society."

And secondly—

> "That, wherever the words Dentists or Dentistry occur in the Bye-laws, the words Dental Surgeon or Dental Surgery shall be substituted."

With regard to the first, I may say that ever since 1863

resolutions have been brought before the Council from time to time, advocating the imposition of a qualification for the membership of the Society. And in 1865, during my first Presidentship, such a resolution was recommended by the Council at the Annual General Meeting, but was not adopted. Since then there have been one or two efforts made to revive the subject, and we now again bring before you a carefully considered resolution, the discussion of which has occupied much of the time of the Council since November, it having been re-introduced during Mr. Woodhouse's Presidentship. The resolution gives due notice of the date of the proposed change, sufficient to enable any members of the profession who do not hold diplomas, but who are at present eligible for our membership, to offer themselves as candidates. It affirms that the Licentiateship of Dental Surgery is the chief qualification for the membership of a Dental Society. It fully recognises and cordially welcomes the close connection between General and Dental Surgery, and it also invites the co-operation of those who are interested in the progress of Dental Surgery, and who from the nature of their pursuits are able to bring valuable knowledge to bear upon it, whether of chemistry, metallurgy, mechanical science, or other and kindred subjects. It necessarily leaves a certain amount of discretion to the Council as regards the recognition of various degrees and diplomas, English and foreign; as it would be difficult to draw up a hard and fast list, and which it might require special meetings to alter in any way. In accordance with Bye-law 78, the Council has deputed me, as its representative, to move the adoption of these resolutions, which I will put to the meeting separately, and beg our members to express their opinions.

Dr. Walker: It devolves upon me, as a Vice-President of the Society, to support the resolutions which have just been so ably put before you by the President, and I perform this duty with pleasure. It may, perhaps, be asked, why should this question, which has been frequently discussed by the Council during the last eighteen years, be now again brought forward for discussion? I may state that, so far as

the Council was concerned, it has always been agreed that the changes now proposed were desirable, the only doubt was as to the particular time at which it was advisable to carry them out, and the Council has now decided that the proper time has arrived. The dental profession is now a body recognised by law, and it is thought to be only right, and in keeping with the position we have now reached, that the Dental Society of London should in future be composed of diplomatized men. At the same time its arms should be opened as widely as possible, so as to include all who have given evidence of scientific attainments, and who are interested in the progress of Dental Surgery. The terms of the resolution have accordingly been made so comprehensive that none can be excluded who have any claim to be recognised by the Society. I believe that this resolution will, if adopted, do much to raise the tone of our Society, and that it will also raise us in the estimation of our sister societies, and in the estimation of the Royal College of Surgeons. I must confess that I have looked forward to this meeting with some anxiety. I do not anticipate that the resolutions will meet with any strong opposition, but there may possibly be some dissentients; I hope, however, that they may, if possible, be adopted unanimously.

As you have heard from the President, this question was brought before the Council last November, when Mr. Woodhouse was President, and he took a warm interest in the discussions which ensued. I feel strongly that Mr. Woodhouse ought to be in my position to-night, but unfortunately he is not now a member of the Council; it has therefore fallen to my lot to support the President in laying this proposition before you. With these remarks, Gentlemen, I leave the decision in the hands of the Meeting.

The Secretary then read the following letter from Mr. W. A. Hunt, of Yeovil:—

"Dear Mr. Rogers,

"I regret that I shall be unable to be present to support the resolutions which are to be brought before the Society at the Special General Meeting on April 4th.

"In the Council it is known that I most cordially agree with the resolution, as I feel certain it will have a most beneficial action in raising the tone of our Society, and in putting it upon a stronger, because a more educated basis; but I should be very glad if, at this Meeting, you would make the members generally aware of my views on the matter.

"That the adoption of the resolutions will give me the greatest satisfaction I need hardly say, for I feel how much culture and education we all need as a body, before we can expect, or lay any claim to, public recognition as members of a liberal profession.

"We must do more than *demand* social esteem, we must *deserve* it; and instead of expecting honour to flow from the possession of a diploma, let men rather endeavour to grace and give lustre to the diploma they may hold.

"The Odontological Society is now surely long enough established to require some little evidence of education and training from such as shall hereafter seek the privileges of membership.

"Believe me to be,

"Dear Mr. Rogers,

"Very faithfully yours,

"W. A. HUNT."

"Pen Villa, Yeovil,

"31*st March*, 1881."

Mr. Coleman said he should like to call attention to one important point which had not been referred to either by the President or by Dr. Walker. When the proposal was first brought forward eighteen years ago, he warmly supported it, and he had done so on all occasions since; he did so on the ground of justice to the Dental Licentiates. He thought that this Society had not paid them the honour it should. To place qualified and unqualified practitioners on an apparent equality was unfair to the former, and was not a due recognition of the value of the diploma.

Mr. Parkinson said that possibly the following statistics, compiled from the List of Members, might be of interest at that moment. The roll of the Society comprised 230 licentiates; 47 members who were both licentiates and members or fellows of one of the surgical colleges; 13 who held a surgical diploma without the dental licence; 14 who held the D.D.S., and 7 who held English University degrees, making in all 311 qualified members, whilst the unqualified amounted to 60. The proportion of qualified to unqualified was, therefore, more than 4 to 1.

The President then requested the visitors present to withdraw, and, having explained that in order to carry the resolutions at least two-thirds of those present must vote in their favour, he proceeded to put the first resolution to the vote.

On a show of hands this was declared carried, 33 voting in its favour out of 42 members present.

The second resolution was then put from the chair, and was likewise agreed to, 32 members voting in favour of it.

ORDINARY MONTHLY MEETING.

April 4th, 1881.

THOS. A. ROGERS, Esq., President, in the Chair,

The minutes of the previous Meeting having been read and confirmed,

Messrs. Stanley Cook, and G. E. Hammond signed the Obligation Book, and were formally admitted to membership by the President.

The President announced that Mr. Ernest E. Jewers, L.D.S., Eng., of Plymouth, had been duly nominated and would be balloted for at a subsequent meeting.

The following gentlemen were then separately balloted for and elected Members of the Society:—

Messrs. John Ackery, M.R.C.S. and L.D.S., Eng., 24, Queen Anne Street, Cavendish Square; and

Marcus J. Davis, L.D.S., Eng., of Maida Hill West, as Resident Members; and

Mr. J. O'Donaghue, of Monte Video, as a Corresponding Member.

Mr. Henry Sewill related the following case of paralysis of the parts supplied by the inferior dental nerve, following the extraction of a wisdom tooth.

A young lady came to him complaining of neuralgia affecting the left side of the face, and which she referred to the lower wisdom tooth on that side. The crown of this tooth was about two-thirds exposed; there was no caries visible, and it did not appear to be impacted. As, however, the patient persisted in condemning it, and it was evidently useless for the purpose of mastication, Mr. Sewill determined to extract. He accordingly gave gas and then seized

the tooth with a pair of thin, but strong, stump forceps, but was at first quite unable to move it. After using a considerable amount of force and turning the tooth slowly and deliberately inwards and upwards, he succeeded in raising it a little, and then, exchanging the stump forceps for a more powerful pair, he succeeded in extracting it. The roots of the tooth, which he exhibited, were large, widely separated and curved backwards; one being deeply grooved and the other having a foramen through it, as though for the passage of a nerve and artery.

The patient was at once relieved of her pain, but on reaching home she found that she had lost all sensation in the part supplied by the inferior dental nerve; there was complete anæsthesia of the skin of the lower lip as far as the middle line in front, and all the teeth on the left side up to the right central incisor were completely insensitive. Remembering the favourable termination of similar cases which had been brought forward some years ago by Mr. Luther Holden, he had ventured to give an encouraging prognosis. The lady was bearing the inconvenience patiently. He had once before had a case of paralysis of the dental nerve, in which sensation was restored after the lapse of months by the help of galvanism.

The PRESIDENT remarked that bringing such cases before the Society served a very useful purpose. Practitioners might often be unjustly blamed under such circumstances, and might even be prosecuted for malpractice and hardly dealt with, unless it could be shown by reference to published cases that it was an accident which might occur to any operator, however skilful.

MR. COLEMAN asked whether Mr. Sewill's patient was much troubled by the saliva running from the mouth? In a similar case which he had brought before the Society some years ago, the patient was much annoyed by the dribbling of saliva; it was not of course due to any loss of muscular power in the lip, but simply to the loss of sensation; the patient could not feel it running over, and consequently she was not aware of it until it dropped on her dress. The paralysis in

this case lasted for a considerable time, he believed as much as two years; it then got gradually better.

Mr. Browne Mason said he had once met with a precisely similar case. The tooth, a lower wisdom, was so obstinate that he was at last obliged to prise it out with an elevator: he then found that the posterior fang was curved sharply backwards. Paralysis of the parts supplied by the inferior dental nerve followed, but only lasted about a month.

Mr. Charles Tomes said he had noticed the following anatomical fact which might throw some light upon the cause of this paralysis. He had found by removing the outer alveolar plate of the lower jaw, that when the alveolar process was sufficiently deep the roots of the teeth grew straight, but that when there was not sufficient room they were turned backwards as soon as they came in contact with the roof of the inferior dental canal. The fact, then, that the roots were curved showed that their apices had been in close proximity to the nerve, and it was not surprising that this should occasionally be injured in the operation of extraction.

Mr. Sewill said he was much interested in what Mr. Tomes had stated; he thought it gave a very probable explanation of the cause of the paralysis. His patient had not been troubled with any dribbling of saliva.

Mr. Rymer exhibited a plate made of dental alloy, measuring two inches across, which had been swallowed by its owner during sleep. The patient went to sleep wearing the plate, was suddenly awakened with a feeling of impending suffocation and found that the plate had disappeared. His efforts to remove it only made matters worse, and he was therefore taken to the Croydon General Hospital. The house surgeon there being unable to extract the plate, Mr. Henry Horsley, one of the medical staff, was sent for. The patient now lay in a very exhausted and alarming condition, with great dyspnœa and continually coughing up frothy and bloody mucus. Mr. Horsley, by passing his finger over the tongue, could just feel the edge of the plate; it appeared to be impacted at the

lower end of the pharynx, just behind the larynx. Using his left forefinger as a director, the surgeon passed down a pair of curved forceps and managed to seize the edge of the plate and draw it up. The plate, which was shown, had originally carried six or seven teeth, but though these had all been broken away, the patient continued to wear it, not liking to leave it off "for fear he should catch cold in his gums!" It presented several awkward, spider-shaped fastenings, which rendered its removal no easy matter.

Mr. Gaddes showed a plate, sent by Mr. Kekwick, of Carlisle, which had been impacted in the pharynx of a woman for ten hours without producing urgent symptoms. The following notes of the case were supplied by Dr. David Carlyle, who was called to attend the patient:—

At six o'clock in the evening of May 15th, a messenger informed me that a widow, aged about fifty-five years, had been very poorly all day, but he ascribed the symptoms to her peculiar habits. He was in no way alarmed or anxious as to her state, so little, indeed, that I did not pay my visit for one hour after receiving the call. I saw her then about seven o'clock in the evening. No person was with her in the house; she was in bed lying on her right side. She made no complaint, nor were any symptoms of uneasiness or suffering indicated. I could obtain no information from her as to any illness, not in the least did she refer to her mouth or throat. I noticed an alteration in her speech, this being accompanied with a peculiar cluck. It was casually mentioned that her false teeth were lost since the morning; she could give no information as to their whereabouts; during her conversation no cough, spasm, or suffering pointed to their situation. Examination along front of neck gave no information. I then got a tablespoon, the only convenient instrument, bent the handle down to nearly a right angle to draw forward and depress the tongue for examination of pharynx. No foreign body then could be seen there; the effect, however, was beneficial, it induced much straining and vomiting. After these had subsided I again examined the pharynx with the spoon, and could then see the plate and teeth low in back of

pharynx. The arch of the plate was upwards, and the roof or upper side of it towards vertebral column. With the tablespoon and the aid of dressing forceps I was able to remove the plate of teeth without any difficulty. A man who lives in her house and some female neighbours knew that her teeth were lost, but had no suspicion that they were in her throat; they state they were missing at nine in the morning; they were removed at seven in the evening (ten hours afterwards).

The case is remarkable from the patient being, as she states, unaware of the presence of the plate in the pharynx, and also from the small amount of suffering and inconvenience it induced.

The SECRETARY read the following description of a sanitary spittoon, or salivarium, which had been sent by Mr. Thomas Murphy, L.D.S.I., of Bolton, and which he stated to be the joint production of Mr. J. Renshaw and himself:—

"The difficulty of keeping the various kinds of spittoons which are sold by the depôts free from disagreeable odours, notwithstanding the free use of disinfectants, will have been experienced by many members of the profession, and the absolute necessity of having our surgery free from contamination of any kind where it can be avoided, must be my excuse for bringing this matter before the Society."

As will be seen in the photograph, it is a bracket 3 feet long, telescoped, so that it can be elongated to 5 feet; and can be moved in any direction, so that there is no obstruction at either side of the chair.

The upper tube is the supply pipe, the lower tube the waste pipe. The swan, as given in the photograph, is a tap, and gives a supply of warm water; when turned at right angles to the tubes the supply is stopped.

Running round rim of bowl is a perforated pipe which, by means of a tap at back, flushes bowl, thereby removing at once anything that could offend sight or smell. The waste pipe is carried into the cellar area, and everything from it drops into a gully, so that sewage gas cannot possibly get into the surgery. The whole is nickel plated.

In a subsequent communication, Mr. Murphy said, "Since

having the bracket fixed I have had the swan removed, and have had a small table, six inches square, placed immediately behind the bowl; this is of great use for holding glasses, &c. My patients are very much pleased with the appearance and cleanliness of the arrangement."

Mr. Oakley Coles said he did not think the time of the Society would be altogether wasted by devoting a few minutes to the consideration of such a humble subject as spittoons. So far as he could judge from the description which had just been read, Mr. Murphy's closely resembled the Whitcomb spittoon, which was brought out about 16 years ago, and was supplied with the Whitcomb chair. But in his opinion all spittoons which were fitted with tubes and waste pipes were bad, owing to the difficulty of preventing them from becoming foul. After trying various kinds, he had come to the conclusion that the ordinary hand spittoons, such as were commonly used for gas cases, were the best. He kept a dozen of these ready for use, a fresh one was supplied to each patient, and those which had been used were easily washed out with hot water, and then turned upside down until wanted.

Mr. Robert Woodhouse exhibited a sequestrum which had been removed from the lower jaw of a little girl, five years of age, by Mr. Frank Robinson, lately a student at the Hospital, and read the following notes of the case, which had been supplied by Mr. R. M. Theobald, of Blackheath.

The patient first came under Mr. Theobald's care in July, 1880. She had then great enlargement of the right side of the face, and on close examination this was found to be due to the presence of a large bony mass, like an exostosis, along the lower jaw. She had already been under treatment as an in-patient at Guy's Hospital for four and a-half months, the swelling having first appeared about the beginning of the year. On examining the mouth, the molar teeth were found to have been extracted, and a constant discharge of fairly healthy pus was issuing from the sockets. Her general health was not much affected, though she had suffered greatly from pain, and had

become somewhat weakened by the discharge of pus. At first Mr. Theobald was inclined to diagnose the case as one of exostosis, either of scrofulous or more probably syphilitic origin; but further observation satisfied him that the child was suffering from scrofulous necrosis of the jaw. About a month later pus began to flow also from the ear, and the submaxillary glands were much enlarged; the pus also become more offensive, often so much so as to render the room the patient occupied almost intolerable to other persons. There was occasional bleeding from the gums covering the diseased bone, but it was never profuse.

Under treatment her general health improved, a hacking cough, which tormented her, ceased; she gained flesh and strength, the pain was much mitigated, and the discharge became less profuse. The swelling, however, did not diminish in size, and the child was always excessively frightened by any attempt to examine it.

The patient continued in much the same state until December 28th, when Mr. Theobald found that a bony mass was protruding along the whole margin of the jaw, the alveolar ridge itself was in fact projecting above the level of the gum, a hard, rough mass, bathed in pus. It was quite loose, and might apparently have been easily separated, but owing to the extremely nervous and sensitive nature of the child, Mr. Theobald was unwilling to attempt it without an anæsthetic. On January 8th, however, he put her under chloroform, and Mr. Frank Robinson removed the sequestrum by slight traction with forceps. The discharge of pus ceased almost immediately, and the swelling has since gradually diminished, though a considerable amount of enlargement remains. It appears that the periosteum of the maxilla was not destroyed, for a growth of new bone has already taken the place of that which was removed. The bony outline is perfectly distinct, and it seems probable that when the swelling has subsided little or no deformity will remain, and that the ordinary movements of the jaw will be re-established. Of course the lower teeth on the right side are lost, but they are well developed on the opposite side of the mouth.

Mr. Ackery showed examples of unsymmetrical deformity of the central incisors from patients the subject of hereditary syphilis. The specimens were obtained from two cases in which the manifestation of hereditary syphilis was marked by the characteristic dental deformity described by Mr. Jonathan Hutchinson, but affecting in both cases only *one* of the upper central incisors, which happened in each case to be the left.

In the first case the patient, when admitted into Middlesex Hospital in 1877, was 16 years of age. She was one of 13 children, of whom only six were living; her mother had had also two miscarriages. The patient had shown no symptoms of disease until eighteen months before, when she began to suffer from pain and swelling of the right knee. She was, on admission, suffering from massive nodes of both radii; these were shortly followed by cranial nodes, which were reduced by treatment. The patient was then discharged, but was soon re-admitted, suffering from necrosis and exfoliation of the frontal bone. After this she remained under treatment suffering from periostitis of the tibiæ, albuminuria and dropsy, and died of uræmia on November 16th, 1879. Mr. Ackery showed the upper incisors and the right lower first molar of the patient, extracted in the *post mortem* room. The left upper incisor presented the characteristic form of the Hutchinsonian tooth, whilst the right was exceedingly well formed. The molar presented the dwarfed and dome-shaped appearance described by Mr. Henry Moon.

The other specimen was a model taken from a skeleton preserved in the Middlesex Hospital Museum. Unfortunately no history had been preserved, but it was always brought forward at lectures as an example of the effects of hereditary syphilis on the osseous system. Both tibiæ, all the bones of the forearm and many others showed signs of necrosis, periostitis, &c., whilst there were several spots in which the external table of the skull had exfoliated. The model showed a well formed right, but a typical syphilitic left, incisor; the laterals were wanting.

The cases were interesting, first on account of the great rarity of cases in which this deformity was unilateral. Mr.

Ackery only knew of one other recorded case. Secondly, because they were examples of a local dental manifestation of an hereditary constitutional disease. And, thirdly, because in the first case no symptoms of syphilis, save the presence of the incisor tooth, presented themselves until the patient was 14 years of age. In fact, owing to the extensive bone lesions and the late age at which the disease first showed itself, many who saw the case regarded it as one of *acquired* disease, but Mr. Ackery thought that the presence of this tooth should have been taken as pathognomonic of inherited syphilis.

The Secretary then read the following communication from Mr. Morton Smale, with reference to the microscopical specimens which he had sent for exhibition:—

"Mr. President and Gentlemen,

"My main object in showing the three specimens under the microscope is that I may hear the opinions of others with regard to them. Their history is as follows:—About nine months since I removed a left upper canine from the head of a patient who had suffered considerable pain for a long time, the pain evidently being caused by inflammation of the alveolo-dental membrane; the tooth was difficult to remove, but eventually came away, bringing a large piece of alveolus with it. This could not be removed from the tooth, the adhesion being very strong. It was put aside, and a few weeks ago I found it again, with the bone still adherent. The tooth was then sawn in two, and sections were made, which are those now under the microscope. In preparing these specimens the greatest roughness was used; a coarse file was used to file a tolerably thin section thinner, and finally the lathe; yet in neither case did the bone separate from the tooth; nor did it in polishing the surface of the remaining portion of tooth. I find it difficult to decide, even with the microscope, whether or not there be real ossification, as do several microscopists who have seen them.

"Specimen No. 1 is mounted in Canada Balsam.
,, 2 is mounted dry.
,, 3 is self-evident, the surface having been polished with putty powder.

"The opinion of others is what I most desire; my own being that there is ossific union in places only."

Mr. Gaddes said the case reminded him of a similar one which had occurred in his own practice. He removed a tooth with a piece of bone, part of the alveolus, so firmly attached that he felt almost convinced that it must be a case of anchylosis. But on making sections and *staining them* the fibrous tissue separating the bone and tooth was clearly apparent, and it was evident that there was no bony union after all.

The following specimens sent for exhibition by Mr. George Brunton, of Leeds, were handed round:—

1. A multicellular base in vulcanite.
2. Four molars showing the action of iron medicine in producing decay.
3. Union of the second and third lower molars.
4. Absorption of part of the root of a lower second molar due to the pressure of the crown of an impacted third molar.

The President then called upon Mr. Stocken to read his paper.

On Certain Constitutional Remedies in the Treatment of Inflammatory Conditions of the Vascular Tooth Structures, and of Neuralgia arising therefrom.

Mr. President and Gentlemen,—The subject to which I am privileged to call your attention this evening refers to "Certain Remedies used in the Constitutional Treatment of Inflammatory Conditions of the Vascular Tooth Structures, and of Neuralgia arising therefrom." The subject is one of interest and well worthy our consideration; for I cannot but think that, in the past, we have too much neglected to avail ourselves of the assistance which remedies acting through the system afford us.

The remedies to which I especially desire to direct attention are Chloride of Ammonium, Sulphide of Calcium, and Gelsemium. I have selected these because the knowledge of their action is not so general as that of many other agents. I have used these medicines alone and conjointly, and have found them of the greatest service in cases of periostitis—either dental or alveolar—of affections of the pulp, and of neuralgia of dental origin. As these several pathological conditions are pretty well known to you all, it is

not necessary for me to do more than briefly refer to them.

In the words of Mr. Tomes, "As to neuralgia, when pain is felt in a tooth, we describe it as odontalgia; but when the tooth is free from pain, or the suffering in other parts is so great as to distract attention from the localised pain in the tooth, we speak of it as neuralgia. From a pathological point of view, the disease neuralgia probably has no existence; it is but a symptom indicative of a lesion at some point, which may be discoverable, or may be hidden from our view; and it is not indicative of any one particular lesion, but of a great variety of morbid conditions. Nor, from a pathological point of view, are we justified in separating odontalgia and neuralgia from one another, seeing that the two arise oftentimes from precisely the same cause."

Neuralgia has been defined by Dr. F. E. Anstie as a "disease of the nervous system, manifesting itself by pains which, in the great majority of cases, are unilateral, and which appear to follow accurately the course of particular nerves, and ramify, sometimes into a few, sometimes into all the terminal branches of those nerves. These pains are usually sudden in their onset, and of a darting, stabbing, boring, or burning character; they are at *first* unattended with any local change, or any general febrile excitement. They

are always markedly intermittent; at any rate, at first, the intermissions are sometimes regular and sometimes irregular; the attacks commonly go on increasing in severity on each successive occasion. The intermissions are distinguishable by complete, or almost complete, freedom from suffering, and in recent cases the patient appears to be quite well at these times, except that for some short time after the attack, the parts through which the painful nerves ramify remain sore and tender to the touch. In old standing cases, however, persistent tenderness, and other signs of local mischief, are apt to be developed in the tissues around the peripheral twigs. Severe neuralgias are usually complicated with secondary affections of other nerves which are intimately connected with those that are the original seat of pain; and in this way congestion of blood-vessels, hyper-secretion or arrested secretion from glands, inflammation, and ulceration of tissue, &c., are sometimes brought about."

In this sketch of Dr. Anstie's definition of neuralgia, we have portrayed different degrees of development and of intensity; and accordingly the treatment (so far as the remedies under consideration are concerned) will vary.

In treating neuralgia, we as dentists have chiefly to deal with the trifacial nerve, and particularly with its second and third divisions. But

it is necessary to keep in view the territory of the peripheral ramifications of other nerves, the points of their origin, together with their numerous peripheral, ganglionic, and central communications, in order to appreciate fully the complicated morbid phenomena of nerve-life.

It is very generally supposed that no morbid changes in the nerve can be recognised in the majority of cases of neuralgia ; but Wedl, in examining some nerves which had been resected by Schub, found disordered conditions both in the neurilemma and in the nerve tubes. In the former, an hyperæmic swelling occurs, and the interstitial connective tissue of the nerve-tubes acquires a finely granular cloudiness ; in the latter, a finely granular metamorphosis of the medulla is observed. In old chronic cases, pigmented granular spots were found; and in one case he distinctly made out that the axis cylinder was in a measure obliterated by strongly refractive masses. These were entirely soluble in hydrochloric acid, therefore were calcareous grains. They were also found interspersed in the interstitial connective tissue.

We may then divide these disorders of the nerves into—disorders of sensibility without local disease ; inflammation of the nerves ; and, thirdly, a disintegration or degeneration.

In all these pathological conditions the first cause appears to be an excessive blood supply.

One or more of the remedies to which I hope presently to direct your attention have the power to modify or suppress that supply, and thus help to restore the parts to their normal condition.

The causes for these conditions may be ascribed to almost every diseased condition which affects the teeth, including periostitis in any of the bony canals through which the nerve trunks pass, or inflammation of the mucous membrane, or of the periosteum of the antrum.

Presently I shall speak of the physiological and therapeutical effects, as also of my experience of the medicines under observation in this paper, and I think we shall find in them agents to meet those pathological conditions, so far, at all events, as irritability and inflammation of the nerves under consideration go.

We have next to deal with morbid conditions of the pulp. Under this head we include irritation, acute and chronic inflammation. With the causes which produce these conditions it is not within the scope of this paper to consider.

In selecting our remedy it is very necessary to distinguish between hyperæsthesia and inflammation, always remembering the difficulties attending the recognition of an idiopathic inflammation, and especially those cases in which there are no caries, or, at least, no visible caries. An inflammation of the periosteum of the fang of a tooth may be mis-

interpreted as one of the pulp; another difficulty lies in distinguishing between inflammation and the hyperæsthesia of the pulp which is occasioned by a congestive condition. Pain that is due to irritation, or to chronic inflammation of the pulp, is rarely continuous, and partakes more or less of a neuralgic character, so that the patient is often quite unable to point out the affected tooth. It is, more often than not, periodic in its access, and is generally absent at the periods of full vigour. Cold applications, which diminish the pains induced by inflammation, increase them in these cases.

As inflammation of the several tissues, whether of the pulp or of periosteum, require similar constitutional treatment, I will not trouble you by recapitulating the symptoms of these various pathological conditions; neither need I say anything with reference to alveolar abscess and necrosis.

Chloride of Ammonium. *Syn. Hydrochlorate or Muriate of Ammonia. Sal Ammoniac.*

A salt obtained by neutralising ammonia with hydrochloric acid. Its action on the general system is that of a liquefacient and resolvent; it promotes secretion and exhalation generally; softens and loosens textures; checks phlegmonous inflammation; lessens inflammatory effusion and promotes their re-absorption. It operates like the more powerful alterative agents, but is less lique-

facient and resolvent on the organic tissues, and less stimulant to the lymphatic vessels than mercury. Solutions of chloride of ammonium, in large doses, injected into the veins of animals, generally caused convulsions, sometimes paralysis and death, thus attesting its action on the nervous system.

Pereira asserts that the resolvent operation of these medicines is usually explained by referring it to an augmented activity of the absorbents. But this explanation is imperfect, and does not account for all the phenomena. The effect is ascribable to a change in the nutrition of the parts affected, and Dr. Anstie ("Practitioner," December 1868) characterises it "a pure tonic stimulant to sensitive nerves, raising them to a level of tense vitality *too high* for the explosive perturbations which, when carried to the brain, are translated as *pain*, and to the vaso-motor system, directly inciting to a superior tone of the systemic vessels which puts an end to that exaggerated passive congestion of viscera which is known to be fatal to the healthy performance of the function of secretion."

Under the name of the "Facial Neuralgia of the Young," including under this term what is often described as bilious and hysterical headaches, Dr. Anstie states that this salt (gr. x–xx), if given early enough, seldom fails to cut short, or greatly to mitigate the attack.

Ringer says, many eminently practical men go so far as to assert that in this painful affection they require no new remedy since Chloride of Ammonium so rarely fails; and Dr. A. Lindsay considers it deserving of a high place amongst our more valuable alterative, resolvent, and liquefacient remedies.

In facial neuralgia and periostitis in doses of 30 grs. three times a day usually gives relief after four or five doses, otherwise it is of no use to continue it. Some advise that it should not be given in periostitis until suppuration has set in.

Sulphide of Calcium, Ca. S. Synonyms, Canton's Phosphorous Mono-sulphide of Calcium, Sulphuret of Calcium.

Characters: A pale, brownish-white amorphous powder, with hepatic taste and alkaline reaction, sparingly soluble in water, in which it slowly decomposes, evolving sulphuretted hydrogen. Exposed to the air, more especially damp air, it absorbs oxygen. When very freshly prepared it is phosphorescent, hence its old name, *Canton's Phosphorus.*

The physiological effects of the sulphides on the blood after absorption into that fluid are at present unascertained. In small doses they excite a sensation of warmth at the epigastrium and act as slight irritants to the intestines, and cause gentle relaxation of the bowels; but in excessive doses

they produce active inflammation in the digestive canal, even insensibility, and speedy death. It has been suggested, however, that these latter results are due rather to the action of these substances on the stomach itself than to their absorption into the blood and conveyance to the nerve centres: for it appears from Bernard's experiments, that sulphuretted hydrogen injected into a vein is so quickly eliminated by the lungs that the arterial blood is uncontaminated by this gas, and consequently the nerve centres cannot be affected by it.

Dr. Ringer, in speaking of the sulphides, designates them as remedies which influence the suppurative process in a marked and manifest manner. They appear to possess the property of preventing and arresting suppuration. Thus, in inflammation threatening to end in suppuration, they reduce the inflammation, and avert the formation of pus. After the formation of pus, the influence of this group on the suppurative process is still more conspicuous; then the sulphides hasten maturation considerably, whilst, at the same time, they diminish and circumscribe the inflammation, promote the passage of the pus to the surface, and the evacuation of the abscess.

He gives as a typical example of the efficacy of the sulphide of calcium, the case of a deep-seated abscess which might take three or four weeks to

make its way to the surface, or be fit to be opened, by giving in such a case the one-tenth of a grain of sulphide of calcium mixed with a grain of sugar of milk, every hour or two. The results are most striking. The pain and constitutional disturbance begin to diminish, the swelling becomes smaller, the pus reaches the surface in four or five days, leaving, when it is evacuated, a *benign* wound which quickly heals.

It may be urged that it is difficult to imagine how these remedies can produce effects so different and apparently opposite, as the dispersion of inflammation in one case and the expulsion of pus in the other: but poultices and hot fomentation both subdue inflammation and hasten the evacuation of pus.

The sulphide should be continued until the discharge has nearly ceased, and till stimulating applications are needed, when tonics must replace the sulphides.

It was in consequence of my reading Ringer's article on the sulphides that I decided to try the sulphide of calcium in cases of periostitis and alveolar abscess. The results have been satisfactory in the highest degree. I shall give the details of two or three cases, as typical of many in which I have given this medicine.

Case 1. *Incipient alveolar abscess.* The tooth affected was the first left upper bicuspid. The

face slightly swollen, the tooth painful on occlusion, and somewhat loose. These abnormal symptoms began to subside soon after the commencement of the treatment, and no abscess resulted. The treatment consisted in taking the first day one-tenth grain of the sulphide in the form of pill every two hours, and the following two days one every four and six hours.

Case 2. *Chronic periostitis.* This case was one of a non-carious tooth, but through previous attacks of periostitis and absorbtion of the alveolus, it occasionally became loose and very painful, its vitality was considerably impaired, and it was subsequently found to be slightly exostosed.

The sulphide of calcium pills always (if taken in time) checked the coming attack, but as it was a case in which cure was impossible, I at last induced my patient to allow me to remove it.

Case 3. *Chronic alveolar abscess with necrosis of two years' standing.* In this case the action of this medicine was most strongly evidenced. This patient came to me complaining of tenderness in a lower central incisor, and of a constant discharge. He informed me that ten years before he had fallen, and in doing so he believed he had struck this tooth ; from that time it became discoloured, but, except on one occasion, it had never troubled him until two years before he came to me ; during the whole of that time there had been an

almost daily discharge through a sinus corresponding to the apex of the fang. I prescribed the sulphide of calcium pills (one-tenth grain) every two hours at first, and subsequently three times a-day. The discharge entirely ceased. But upon a cessation of the medicine it returned, and again ceased upon a resumption of it, thus proving beyond question its action upon the system.

As the subsequent history of this case is an interesting one, I shall, with your permission, record the treatment I adopted afterwards. I drilled through the back of the tooth (a lower incisor), and opened the pulp chamber, intending to remove any remains of the dead pulp I might find, and, by syringing some antiseptic and stimulating agent through the tooth and sinus, to set up a reaction, and effect a radical cure.

I felt little confidence in the success of such treatment in so chronic a case as this. Finding it impossible to carry out my treatment, through some impediment in the fang, I extracted the tooth and subsequently replanted it. I found the apex of the fang much necrosed, and the fang had two pulp canals. I incised the necrosed portion (about one-eighth of an inch), which I found filled with septic matter ; and after preparing and plugging the tooth (with Poulson's cement) all the while keeping it moist with solution of carbolic acid, and well syringing out the socket with a weak solu-

tion of the acid, I replanted it. This was a year ago last November, and my patient from that time to the present has never had the slightest discomfort, and it is as firmly set as the other teeth.

I may mention that the sulphide of calcium is a very unstable compound, and unless freshly prepared, or prepared in such a form that the air and moisture cannot affect it, it is perfectly inert. Mr. Martindale, of New Cavendish Street, prepares it in the form of small pills, each containing one-tenth of a grain; these pills are coated, and will retain their active properties any length of time.

Gelsemium, sometimes called Gelseminium, or the Yellow Jesamine.

This twining perennial belongs to the figwort order—a native of North and South America.

The active principle of this plant is an alkaloid, called gelsemia, upon which its efficiency depends; it resides in all parts of the plant, but chiefly in the root. The dose of the alkaloid is from $\frac{1}{2}$ to 2 grains. The tincture is prepared by digesting 1 oz. of the root in 10 ozs. proof spirit for a week; the dose of which is 10 to 20 minims.

It is readily absorbed into the blood, and exercises a sedative action on the nervous system; like conium it is a paralyzer; but, unlike it in its mode of action, the paralysis does not commence at the periphery. It destroys muscular irritability,

and impairs the sensibility of the sensory nerves. In large doses it is poisonous, causing great prostration, nausea, vomiting, dilatation of the pupils, more or less loss of sight, inability to speak or move, coldness of the surface, paralysis of the muscles of respiration, and death by apnœa.

Antidote—Ammonia (Sal Volatile). Apnœa.

Drs. Ringer and Murrel have made numerous observations regarding the physiological action of this drug, and the condensed accounts were published in the "Lancet" for 1876 and 1877; from them I gather most of what I shall have to say relative to this medicine.

The first effects of Gelsemium, when not given in poisonous doses, is upon the eyes and brows, producing pain in the brows, followed by giddiness, then by pain in the eyeballs, and soon after by dimness of sight. Larger doses produce double vision, a sensation of great heaviness in or under the upper eyelids, with somewhat contracted pupils. A still larger dose causes drooping of the upper lid. The patient next complains of weakness in his legs, and, Dr. Ringer here says, "we have never pushed the drug beyond the production of this symptom"; when decidedly under its influence the patient is pale, with a heavy, sleepy look. The experiments of Drs. Ringer and Burdon Sanderson convinced them that this drug produced little if any effect upon the cir-

culation; that it exerted no influence on the blood pressure.

Dr. Ringer says, in answer to the question, is the paralysis due to its influence on the brain, the cord, the motor nerves, or the muscles? "it paralyses the spinal cord: the motor nerves and the muscles being unaffected.

"That tetanus is due to the action of the poison on the cord; the paralysis of the cord always precedes the tetanus."

Its power as a paralyser is undoubted; I remember the case of a gentleman, a patient of a medical friend of mine, who was greatly alarmed in consequence of a numbness of his arm; the assurance that it was the effect of the medicine and would soon pass off, quieted his fears.

Some persons are much more susceptible to its influence than others, the symptoms come on early and soon subside, generally in half-an-hour, except in those cases in which the doses have frequently been repeated. It seems to have a special action on the nerves, supplying the teeth and alveolar processes. Some patients under its influence complain of a numb pain of the gums, and a little tenderness along the teeth and the edges of the gums, but no loss of sensation in the parts.

Dr. Ringer speaks of having tried gelsemium with decided success in several cases of neuralgia of the dental nerves, even when the teeth were

carious ; that in several cases the necessary dose to relieve pain produced much giddiness, haziness, and sometimes sleepiness. In some instances 10 minims three times a day has produced complete ptosis of the neuralgic eye, lasting an hour or longer. I think the strength used by Dr. Ringer must have been stronger that the formula given by Squire in his "Companion to the British Pharmacopœia," that is one part of the root, and ten of spirit. That is the strength I have used, and have usually given it to adults in 15 minim doses ; in some of my cases it has produced a feeling of inebriation, but nothing more.

The case recently reported in the "British Journal of Dental Science," is a striking confirmation of Ringer's assertions.

The type of cases in my own practice to which I have found it serviceable, in addition to those of pure and unmistakable neuralgia, are, those of recently stopped teeth, where through the thinness of the dentine intervening between the filling material and the pulp, the thermal changes have set up irritation leading probably to slight congestion ; a dose or two of gelsemium will generally relieve it, and in a very short time. One case I remember, the tooth had been stopped some few days ; the patient came with a full determination to have the tooth extracted. Not wishing to undo my work, I prescribed the gelsemium ; she assured

me that in ten minutes the pain ceased, and from that time to the present she has had no return. In fact, I think in all cases of irritation of the fifth pair, we may expect, if not a cure, at least considerable relief.

To sum up the matter I would say: in pure neuralgia, gelsemium, with or without aconite; in congestion or inflammation, either of the pulp or periosteum, I would combine with these the chloride of ammonium. In chronic periostitis, with suppuration, I would resort to the sulphide of calcium.

Discussion.

The President said he had listened to Mr. Stocken's paper with great interest. He had long been of opinion that the Dental Surgeon should direct more attention to the constitutional treatment of the teeth and of the parts in close relation to them, than was generally the case at present. In order to promote a knowledge of the value of constitutional remedies in dental practice, he should be glad to see a chair of pharmacology attached to every dental school.

Mr. S. J. Hutchinson said that after the remarks which had fallen from the President, he felt some hesitation in expressing his own opinion; still as what he was about to say was prompted by a stong conviction in his own mind, he felt bound to express it, notwithstanding what the President had said.

He had noticed that in publishing accounts of cases, Dental Surgeons were getting more and more into the habit of stating what constitutional remedies they had used. Now he (Mr. Hutchinson) was strongly of opinion that this was a mistake. The Dental Surgeon should, of course, have

a knowledge of the various constitutional states, and of the remedies which were suitable for each, but he did not think that he ought to carry this knowledge into actual practice. His function was to treat diseases of the teeth, and not general conditions, and he thought that in a case where constitutional treatment appeared to be desirable, the Dental Surgeon should ascertain from the patient who was his medical attendant, and then, if he thought it necessary, he could write to the surgeon giving his idea of the treatment which he thought would be beneficial. The practice which was now gaining ground was, he considered, an encroachment upon the province of the surgeon, and would, if persisted in, lead to strained relations between dental practitioners and the general body of the medical profession. In London the ill effects might not be readily apparent, but in the country the practice could not fail to lead to serious consequences.

Mr. Coleman said he should avoid the difficult question which had just been raised by Mr. Hutchinson, and should confine his remarks to the matters treated of in Mr. Stocken's paper. With regard to ammonium chloride, his own experience had not been satisfactory, he certainly could not speak of it with the same confidence as did Dr. Ringer; indeed in his hands it had generally failed to give relief.

As to calcium sulphide he could only say that if it would really diminish the pain, and shorten the duration of an attack of alveolar abscess, it would certainly prove a great boon to the dental practitioner. With regard to gelseminum again he found that some physicians were disappointed with its effects, whilst others had used it successfully.

Mr. Stocken had not mentioned the neuralgia which was due to rheumatic or gouty periostitis. This was a form from which he had himself suffered acutely on several occasions, and he found that a dose of bicarbonate of potash would cure it at once. On one occasion he thought he would try it first as an external application, but it had no effect; he then took it internally, and it removed the pain almost immediately.

Mr. Oakley Coles remarked that ammonium chloride was a very old remedy; he had used it frequently at one time, but found that although in some cases it acted like a charm, in the majority it gave no relief. It was also very nauseous, though this might be covered by giving it with decoction of liquorice root. He thought that if other remedies failed it was worth while to try it, but there were many things he should prefer to try first.

He had also used the calcium sulphide for some years; it had been recommended to him by Dr. Hemming, of Kimbolton. He ordered it in the form of pills as suggested by Dr. Ringer, but his results had not been uniformly satisfactory. He considered that gelseminum was more often useful than any other remedy he was acquainted with.

Mr. Gaddes said he had used sulphide of calcium, and in some cases with apparent benefit. The conclusions arrived at with regard to the virtues of therapeutic agents were not always as philosophical as they might be. As an illustration of this he would mention two cases. For the treatment of a case of acute periostitis he painted the gum with tincture of aconite and iodine, and ordered sulphide of calcium pills: in two days there was a marked improvement. In a second similar case he pursued the same course of treatment with complete relief to the patient, but on inquiry he found that she had not taken the pills. Therefore were the benefits obtained in the former case due to the local treatment or to the sulphide? One of the cases mentioned by Mr. Stocken appeared to show conclusively the good effects of the sulphide.

With regard to the question raised by Mr. Hutchinson, he would mention that Dentists administered not only local but general anæsthetics. He had directed attention to this some time since in the "Monthly Review of Dental Surgery," and had pointed out that for ten years previously not a single question relating to anæsthetics appeared in the examination papers for the Membership of the Royal College of Surgeons of England; whilst during three or four years as many questions on this subject had been given in the papers for the licence in Dental Surgery of the same College.

Mr. Arthur Underwood said he had used ammonium chloride in a large number of cases and had kept careful notes of the results, he found that it gave relief in about nine cases out of ten.

The President said he could not agree with Mr. Hutchinson in thinking that the Dental Surgeon should confine himself strictly to local treatment, and should leave everything else to the discretion of the medical attendant. At the same time he should be the last to recommend dental practitioners to undertake the constitutional treatment of patients, except in cases where this had a direct influence on the progress of the local disease. It was difficult to define the exact border line between medical and dental practice, but he thought that so long as there was any prospect of saving a tooth the Dental Surgeon was justified in using any means at his disposal, whether constitutional or local, with the object.

He was decidedly of opinion that the licentiate in dental surgery was entitled to administer anæsthetics, and he had himself, whilst a member of the dental examining board of the Royal College of Surgeons, set questions relating to this subject, in order to call attention to the point which had just been raised.

Mr. Stocken, in reply, said that he was quite sure that many of the contradictory reports with regard to the action of some of the remedies he had spoken of were due to the use of unreliable preparations. Calcium sulphide soon altered; even the pills soon became inert, unless they were kept in a very dry place. A short time since he ordered tinct. gelsemini for a patient, and it cured the neuralgia at once. Getting a relapse he had the prescription made up by another chemist, but it had no effect, but after going back to the first the result was again satisfactory. Another cause of failure was the difficulty of ascertaining the pathological state upon which the neuralgia depended: he thought that probably it would be found that when the neuralgia was neurosal gelseminum was indicated, and that when it was due to neuritis the ammonium chloride did good.

With regard to Mr. Hutchinson's remarks, it should be remembered that the patient was in many cases sent by the doctor, and he did not think that it was necessary to send him back again. The doctor might perhaps expect the dentist to remove the tooth, but it was the duty of the latter to avoid doing so if possible. He thought some judgment was required in dealing with these cases, and he always directed the patient to consult their medical attendant, and obtain his sanction before entering upon the treatment he (Mr. Stocken) had advised.

After a vote of thanks to Mr. Stocken for his paper, and to the contributors of the casual communications, the President adjourned the meeting.

Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING.

May 2nd, 1881.

THOS. A. ROGERS, Esq., President, in the Chair.

The minutes of the previous Meeting having been read and confirmed,

Messrs John Ackery, Marcus J. Davis and Scott Thomson signed the Obligation Book, and were formally admitted to membership by the President.

Mr. William Murray Parsons, L.D.S.I. of Great George Street, Bristol, was then balloted for and unanimously elected a member of the Society.

The President announced that Mr. Oakley Coles had presented to the Library a copy of his recently published work on Deformities of the Mouth, and, on the motion of the President, the thanks of the Society were voted to him for his donation.

The Secretary showed, for Mr. Brunton, of Leeds, a left lower molar having lingual and labial, instead of anterior and posterior, roots. Mr. Brunton had not been able to find any mention of such an abnormality in any of the books which he had been able to consult.

The Secretary also, for Mr. J. Fenn Coles, of Ipswich, a bicuspid which showed the destructive effects caused by a gold clasp; an upper second molar showing absorption of roots caused by pressure of third molar; and an abnormally developed left upper central.

Mr. Henry Sewill said that when he brought forward his case of paralysis of the inferior dental nerve, at the last meeting, he had not paid much attention to the anatomical relations between it and the third molar. Since then he had investigated the subject a little by filing away the inner table of the first lower jaw that came to hand, and he found that the inferior dental nerve did pass very close to the roots of the wisdom tooth, much closer than he had previously any idea of. It would be evident to those who would inspect the specimen that there must necessarily be some danger in extracting the wisdom tooth of forcing in the roof to the inferior dental canal. He was sorry to have to add that his patient had not as yet shown any signs of improvement.

He wished also to exhibit models of two typical cases of a very curious and interesting disease, the pathology of which was, so far as he knew, still quite undecided; he referred to the outgrowth of the upper central incisors. It appeared to occur only in women, and was not noticeable before the age of 25. The teeth then gradually began to elongate and protrude, but did not become loose until a very late stage of the disease. There was no discharge, no visible inflammation, no wasting of the alveoli, no similar disease of the other teeth. It was apparently due to extremely chronic inflammation of the sockets with formation of fibrous tissue which forced out the tooth, and in process of time the inconvenience and deformity became so great that the teeth had to be extracted and replaced by substitutes.

He should be glad to know if any of those present could throw any light on the etiology and pathology of this remarkable disease; and also whether any one could suggest any other treatment than that which he had just mentioned, viz., the extraction of the teeth and the fitting of artificial substitutes.

By way of contrast, he would hand round also a model of the mouth of a girl only 18 years of age, showing protrusion of the incisors *with wasting of the alveoli.* This was quite a distinct disease, and one which was much more frequently met with, though it was rare to see it in so young a patient.

For one of the cases first exhibited he was indebted to Mr. Whatford, of Newcastle-on-Tyne.

Mr. Dennant remarked that the state of things shown by one of the models was just that which might occur in cases in which the habit of thumb-sucking had been continued up to a late age. Had Mr. Sewill inquired into this as a possible cause?

Mr. Parsons inquired whether the under lip caught under the upper teeth.

Mr. Hunt said he had met with one very marked example of this disease in a lady about 60 years of age, whose upper incisors and canines protruded almost horizontally outwards; the change commenced when she was about 20. Mr. Hunt extracted the projecting teeth and fitted artificial ones.

In some of these cases the change was due to Riggs' disease, and then the application of a strong solution of carbolic acid or chloride of zinc would gradually arrest the disease for a time, but, so far as his experience went, it always returned sooner or later, and the teeth had to be extracted.

The President said he had found acetic acid a useful application in such cases.

Mr. Sewill replied that as the disease never made its appearance until the patient was about 25 years of age, it could scarcely be due to thumb-sucking. In both of these cases the upper teeth were quite clear of the under, and they only passed over the under lip at a late stage of the disease, so that the altered direction of the teeth was not due to the effect of pressure upon the crowns. This affection was quite distinct from the so-called Riggs' disease; there was no discharge from the gums or alveoli, and, in fact, no sign whatever of any active disease.

Mr. Gaddes then read the following communication from Mr. J. R. Gurner, L.D.S.Eng., of Adelaide, South Australia:

The following successful case of nerve-stretching, the first of the kind in this colony, was under the care of Dr. Chas. Gosse, of this city. Knowing that I felt a great interest in

the case, he very kindly gave me the opportunity of being present at the operation, and subsequently, at my request, supplied me with a copy of his notes, which I here append:—

Louisa F., a German, married, has had seven children, five alive and well; is a healthy-looking woman with an anxious countenance. Ten years ago she had erysipelas of the face, but with this exception has had excellent health, until six years ago, when she first complained of pain in the left cheek and lip, which has gradually increased in intensity from year to year. The pain seems to be aggravated by exposure to the wind, especially when driving, and also by eating or drinking. If the tip of the finger is gently passed along the edge of the lip on the left side, she starts from her chair as if she had received a shock from a galvanic battery; on pressing the cheek, the pain is very severe, but not of the same character. For the last month she had been unable to take any solid food, and even hot or cold drinks are dreaded.

On examining the mouth, I found a number of decayed stumps, and advised a visit to my friend Mr. Gurner, who removed them, but with no permanent relief to the pain. In five days her suffering was as great as ever, and I therefore recommended an operation, to which she readily assented. She had so much pain the night before the operation that her friends could hear her screams all over the house.

On February 12th, 1881, I cut down upon the infra-orbital foramen, and seized the nerve as it passes on to the cheek on an aneurism needle. I thoroughly stretched the nerve in all directions, finally leaving it quite loose in the wound. I united the edges with horsehair sutures, and the wound healed by first intention. On February 15th she had some pain, which slightly increased up to the 20th, after which date she gradually improved and lost all pain. She could eat solids and drink hot or cold liquids with ease and comfort.

On March 12th, when I last saw her, her appearance had greatly changed; she looked happy, and expressed herself quite free from pain. She left town next day for her home in the country, some 200 miles away.

I would remark that nothing could be felt on examining

the cheek externally, nor was there anything abnormal about the nerve when exposed to view. The slight pain which she experienced for the first few days after the operation I attribute to the irritation which the latter set up.

Mr. Hunt showed a very convenient gag, the invention of Mr. Rose, of King's College Hospital. Probably the gag most generally used at present was that invented by Mr. Thomas Smith, and improved by Mr. Wood, but he considered that the one now exhibited presented several advantages. It was very easily managed; could be insinuated between the teeth when the mouth was closed, and then expanded; one side was intended for an adult man, whilst the other was suitable for a woman or even a child.

The President then called upon Mr. Kinsey to read his paper.

On the "German" or Pure Oral System of Teaching the Deaf.

By Arthur Kinsey.

Principal of the Training College for Teachers of the Deaf at Castlebar Hill, Ealing.

Mr. President and Gentlemen,

It is my privilege this evening to bring before you a subject which probably hitherto has scarcely, if at all, engaged your attention. Not, I am sure, from any want of feeling or interest on your part, but solely owing to the matter being outside your usual professional experience.

I much regret that other learned bodies are in a similar position in this respect, though some without reasonable excuse.

The general medical faculty, for instance, must often be consulted upon the state of deafness, either congenital or acquired—total or partial; and when total deafness in a young child is apparent to the physician—a deafness which he must know, if he thinks about the matter, will be productive of dumbness, unless proper means be taken to avoid this terrible affliction—should he not be in a position, having pronounced his fiat of deafness, to indicate a method whereby its unhappily too frequent sequence of dumbness may be prevented ?

Gentlemen, you may ask—"But is such a thing possible?" Can a child born stone deaf, or rendered so by accident or disease in infancy, escape the other and far more awful condition of dumbness?

I hasten to answer most emphatically, *Yes.*

The two states are *not*, as has so long been supposed, absolutely inseparable; the one necessarily a sequence of the other. Dumbness is *not* the natural and inevitable result of deafness.

The opinion must no longer exist that deafness being present, no hope of succour can be held out to the afflicted little one to save it from dumbness. That there is no prospect in the future, other than a life-long weary silence, and exile from the hearing world.

These statements may possibly appear strange and startling when placed before you in an abrupt and dogmatic manner, but I trust in the course of the evening to convince you that they are grounded on a strictly physiological basis, and are amply justified by existing facts.

If you have ever had the sorrowful experience of being connected with a deaf and dumb friend, one with whom you found it most difficult and tedious to communicate, by the slow process of writing or possibly spelling on the fingers—you would surely feel surprised, nay even indignant, were you told that, but for ignorance and prejudice

(I can, unfortunately, select no other terms) such an individual would have spoken as audibly as yourself—and would to all outward appearances have heard, although stone deaf.

Now, Gentlemen, I propose very briefly to explain to you the methods at present employed in the education of deaf children.

The one which naturally suggests itself to your minds, viz., a system of signs and finger spelling, is technically known as the "French" method, because systematised and adopted as the national method in France about 150 years ago. This system, the one I regret to say generally used in this country, teaches a deaf child to become *dumb;* adds a far worse affliction to the already existing one. It teaches the child to understand and communicate ideas by an arrangement of signs (unintelligible to all but experts, and often to them), to spell detached words on the fingers, and to use and recognise written language; but this latter, alas! in a most imperfect manner.

A second system, also practised in this country, and known as the "Combined," is identical with the one just described, but in addition tries the interesting but absolutely worthless experiment of teaching apt pupils to speak words and phrases, somewhat after the manner of a trained parrot.

This is a most mischievous method, for many persons having seen it in operation, have been led

to believe that it is the same as what is technically called the "German" or Pure Oral, which I am here this evening to advocate, and enlist your generous sympathy in behalf of.

This "German" system, so termed because established and nationalised in Germany about the year 1770, considers a deaf child physically and mentally as capable of spoken language as a hearing one.

And why not? The brain being in a healthy condition, the organs of respiration, phonation, and articulation being perfectly normal, and the sense of vision unimpaired, there is nothing to prevent the teaching of audible speech, except ignorance of a means of so doing.

In the case of ordinary beings, the sense of hearing is trained to appreciate and understand the different *sounds* of speech. In the case of the deaf the sense of sight is taught to recognise the varying *motions* made by the lips, mouth, and tongue in speaking.

Thus then a knowledge of spoken language is conveyed by motion and not sound.

Further, if the deaf be taught to imitate precisely these motions, speech must be the natural result. Here there is somewhat of an analogy to the action of the telephonic diaphragms. The transmitting disc being set in vibration by the sound waves created by the voice, and these

vibrations being exactly reproduced by the imitation of the receiving disc, similar sound waves are produced, and voice is the result. The same principle of identical vibrations being reproduced by mechanical means other than the human organ of speech, is illustrated also in the phonograph. It may be of passing interest to this Society to know that the idea of the telephone was first conceived by Prof. Graham Bell whilst engaged in experiments in teaching the deaf to speak, as he informed me when I was studying with him at Boston, at the time he was perfecting his wonderful invention. But to return—

The pupil of the "German" system grows up habituated to spoken language as a general means of communication with the world at large. His speech is (when properly taught) intelligible and *audible* to those with whom he converses. The speech of others is intelligible—though of course not audible—to him, when he can *see* the speaker's mouth—*not unless.*

This must be carefully borne in mind.

Hearing people can only hear speech under certain conditions and within certain distances.

The deaf taught by the "German" method can only see speech in the same way.

It would be impossible within the short limits of a paper like this, in which so many points have to be touched upon, to give more than a brief

description of the details of instruction in articulate speech. We must remember that in speaking three distinct processes are in action at the same time, viz., respiration, vocalisation, and articulation. Ordinarily, we know that respiration is an involuntary movement, but it ceases to be so when we speak, and considerable attention has to be given to the control and management of the air ascending from the lungs, also to the readiest manner of inflating them. Articulation and vocalisation are essentially the results of accurate observation and experience, and are of course dependent upon a healthy condition of the brain.

This will explain at once the reason of the dumbness of idiots where no deafness exists.

In commencing the education of a deaf and dumb child, the first thing to be done is to gain his undivided attention, to accustom him to obedience and discipline, and to develop his powers of accurate observation and imitation. This is frequently a matter of some difficulty, as may well be imagined.

The next step is to increase and regulate respiration, which is almost invariably defective, and usually through the mouth instead of the nose, that in itself being a source of future danger to the child, which is amply borne out by the fact that the deaf who grow up dumb are much

shorter lived than members of the speaking community.

When the pupil is able to respire freely and in varying degrees of strength and quantity, which is accomplished by means of simple exercises in puffing and blowing at light moveable objects, and filling large india-rubber bladders, the next stage is to teach the child to place his tongue in certain positions, to open the jaws in different degrees, and to imitate with the lips the positions required for the labial vowels. These exercises are practised without emission of breath. When they are accomplished with ease and certainty we proceed with the development of articulation.

This is done in a very peculiar and highly interesting manner, and I regret that time will not allow me to do more than give you a few examples.

Philologists and grammarians inform us in effect that there are in our alphabet five vowels and twenty-one consonants, and that these latter are so termed because they are incapable of being sounded by themselves. Well, the student of the mechanism of speech (and a professor of the "German" system must be such) knows different to this, and he further knows that to teach his pupil thoroughly in the matter of articulation he will have to employ no less than twenty-five vowel sounds and thirty-one articulations or powers (miscalled consonants).

I will give you now an illustration : let me take the f of the alphabet, and the compound vowel sound of ou, and now in teaching these we show the pupil for the production of the power of f, that the lower lip is in light contact with the upper incisor teeth, that the breath is emitted centrally and in a downward directon ; this the child understands first by watching the mouth, and next by feeling the breath directed on to the back of his hand, which you hold for the purpose in a suitable position. This action produces the sound which you hear, viz., f. Now the vowel ou is compounded of two distinct vowels, viz., a, and oo, rapidly and shortly uttered ; the positions required for these two vowels are very visible and easy of imitation. The sound of l is shown in the following manner. The lips and teeth are just open ; the fore part of the tongue is slightly curved upwards, and placed in contact with the front part of the upper gum, and laterally with the upper bicuspid teeth. The air is directed over the lax sides of the tongue, and issues at the angles of the lips.

In this power two vibrations are perceptible to the child, viz., one of the vocal cords, the second of the sides of the tongue. He is made sensible of these vibrations, as in the case of all the vowels and vocal articulations, by placing the tip of his finger upon that part where such vibrations may

be felt, externally on his teacher's throat or organ of articulation.

Now joining these motions together without breaking the continuity of the strain of breath, we produce the word fowl. I have merely selected this word as containing in itself, though apparently to us so very simple, four entirely different and characteristic sounds. Now at the outset of teaching, after having developed the power of f, we write the symbol on the board, make the pupil repeat it from that, and then copy the letter for himself. Following this principle throughout the course, we find four branches of our education proceeding simultaneously, *i.e.*, lip reading, articulation, reading, and writing. When we have succeeded in obtaining all the 56 sounds individually and in combination, we consider the time has arrived to commence the teaching of language. This is confined at first to object teaching pure and simple, or the naming of things in the immediate vicinity of the child—taking firs parts of the head, and body and limbs, next articles of apparel, the furniture and appliances of the class room. From this stage, when a considerable vocabulary has been attained, we proceed to the interrogative forms, what? and where? who? as in the following questions, what is that? who is that? where is the door? etc. Certain verbs are next taken, and used imperatively, as come to me; go to the

door, window, desk; stand up; sit down; give me the book. In each case of course the action must be shown to the pupil, and the child made to imitate it.

By means of the interrogatives what and who, allied with the verb "to do" in its different tenses, a great advance is made in teaching of language. The teacher asks, what am I doing? The child repeats the question, writes it on the board, but the form being quite new, does not understand it. The instructor makes the pupil point to him, and repeat the correct answer, which is then written opposite the query. This is again and again repeated until learned by heart, and is applied to a variety of verbs. So language grows from day to day, new forms being continually introduced, and new matter used, until the time arrives when by means of the language acquired ordinary subjects taught in schools for the hearing are attacked. For you must bear in mind, Gentlemen, that before we can commence the teaching of religion, history, geography, arithmetic, and other branches of study, we have to give our pupils a language; that is our *special* task as instructors, and by far the most difficult; but I can assure you that time and individual capacity *alone* limit the amount of knowledge possible to be gained by a pupil taught by this process; for I myself have known deaf born persons able to speak three languages.

Now the different systems I have mentioned are specially applicable to the born deaf and the totally deaf, but under all systems may be found a class of pupils who are in possession of some degree of hearing, and to benefit these through that sense has of course been earnestly desired and attempted, but with no very great amount of success. The latest effort in this direction has been made by a Mr. Rhodes, of Chicago, U.S.A.—himself partially deaf—who has introduced to the notice of the world an instrument which he calls an Audiphone, or sound hearer. This instrument will naturally possess more than a passing interest to you, Gentlemen, for it is in a measure closely associated with the teeth, as is also another appliance called the Dentaphone.

You will perhaps be interested, Gentlemen, to learn what is the impression made upon persons associated with the deaf, as to the merits of the audiphone. I myself have tried it in about fifteen cases, and failed to discover the slightest satisfactory result; this may be accounted for by my having tried it exclusively on really deaf children—hearing persons I believe hear as well with it as without it. There is a gentleman present who will doubtless give us his views on the question, as he has had opportunities of making experiments on a greater number of persons than I have; but I think he will agree with me in saying that in

cases of deafness, where there is a complete non-appreciation of loud sounds, the audiphone fails in its duty to the deaf as implied by its name.

Continental opinion, so far as it has yet reached me, coincides exactly with my own in respect of the value of the instrument under review. Dr. Schibel, Head of the Institution for the Deaf at Zurich; Dr. Hugenlobler, Principal of a similar institution at Lyon; Herr Streich, Director of an institution at Eslingen; Herr Vatters, of Frankfort-a/M.; Prof. E. A. Fay, Principal of the Chicago Institution for the Deaf and Dumb; Herr Greenberger, of New York, and others, all agree, after repeated experiments, that the audiphone is only useful, so far as yet discovered, in cases of partial deafness, and generally such cases as can be benefited by ordinary acoustic appliances.

Mr. Rhodes's contention in favour of his instrument is that it possesses "the property of gathering the faintest sounds (somewhat similar to a telephone diaphragm), and conveying them to the auditory nerve through the medium of the teeth."

"Persons having false teeth, if they fit firmly, can notwithstanding use the audiphone successfully." Mr. Rhodes adds further, that "the external ear has nothing whatever to do in hearing with this wonderful instrument." Having had a long interview with that gentleman, I gathered

from him that there were undoubtedly cases of deafness which could not be reached by his instrument—these of course being where the auditory nerve was destroyed ; but I believe a theory has been started by some enthusiastic admirers of the supposed principle, that the nerves supplying the teeth can be educated to the performance of the duty of the auditory nerves. When the time arrives that the theory shall be practically demonstrated beyond dispute, the deaf generally, and so called deaf mutes especially, will have reason to be grateful beyond measure. The demonstrator will then doubtless proceed with his good work, and turn his attention to the sad condition of the blind, and educate on the same principle the ophthalmic division of the 5th, let us say, to convey the rays of light to the optic centre. I speak on these matters with all deference in the presence of this learned Society, more especially as I feel sure that certain of the younger members present would be only too pleased at an opportunity being afforded them of demolishing any argument I might forward against the possibility of the transferrence of the senses, or an intrusion on their own particular province, the eccentric complications of their favourite "fifth." All I will venture to say is, that if the theory be capable of proof, then the accepted doctrine of definite sensory nerve functions will be re-

volutionised. I should further add that Mr. Rhodes at present rather holds that the sound vibrations are transmitted to the auditory nerves through the substance of the teeth themselves, and not through the nerves supplying them, for he specially points out that "false teeth if properly fitted" will do the office quite as faithfully, and I have yet to learn, Gentlemen, skilful as are the members of your profession in their close imitation of nature in respect of teeth, that they have thought it either necessary or desirable to introduce an artificial nerve supply into their handiwork.

In making the foregoing remarks upon the merits of the audiphone, I wish it to be fully understood that I do not condemn its use or question its beneficial effects in certain cases, but I do want to guard against a conviction spreading in all directions that an instrument has been discovered whereby the deaf, who hitherto through no cognate appliance have been able to appreciate and analyse sound, may be so enabled. This I cannot bring myself at present to believe nor expect. Therefore we shall still have to do our best in the way of training the quick eye to do partial duty for the dead ear.

* * * *

The question of the future education of the deaf has, within the past few years, been attracting

increased attention, and the press has taken somewhat more cognisance of the subject than hitherto, so that some of you, Gentlemen, may be in possession of certain facts connected with what you may suppose to be a new system of education.

A method whereby they are taught to be almost like hearing persons—for it is a fact that many of the so taught deaf have for a time in sustained conversation escaped notice of their affliction.

Upon the point of novelty I should desire to crave your indulgence whilst I deal briefly with the historic aspect of the subject.

In the "Historie of the Church of England," compiled by the Venerable Bede, A.D. 733, we find the following quaint account of the cure of a dumb man.

John, Bishop of Hagulstadt (now Hexham), in the then kingdom of Northumberland, had a solitary mansion, where he used at times to seclude himself for devotional purposes, especially at the season of Lent. On one such occasion, desiring to have at the same time an object on which to exercise his charity, he caused to be brought to him this young man, whose case and cure are thus described:—

"There was in a towne not farre of, a younge man that was dumne, well knowen of the bishopp (for he used to come before him oftentimes to

receive his almes) who was never able to speak so much as one worde."

* * * *

"This impotent lazar the bishopp commanded to be brought thither, and a harbour to be made for him within the precinct of his house, where he might ordinarily every day receive his almes.

"And when one week of Lent was past the next Sunday he willed the poore man to come into him : when he was come, he bydd him put out his tounge and shew it unto him, and taking him by the chinne, made the signe of the holy crosse uppon his tounge, and when he had so signed and blessed it, he commanded him to plucke it in againe, and speake, saying 'Speake me one word, say gea, gea,' which in the English tounge is a word of affirmation and consent in such signification as yea, yea.*

"Incontinent the stringes of his tounge were loosed, and he saide that which he was commanded to say. The bishopp added certain letters by name and bid him say A ; he said A ; say B ; he said B. And when he had said and recited after the bishopp the whole crosse rewe he put unto him sillables and hole wordes to be pronounced. Unto which when he answered in all points orderly, he commanded him to speake

* It will be remembered that the original was in Latin, and that the English "tounge" here means what we now call Anglo-Saxon.

longe sentences, and so he did; and ceased not all that day and night following, so longe as he could hold up his head from sleepe (as they make report that were present) to speake and declare his secrete thoughts and purposes, which before that day he could never utter to any man."

* * * *

It seems not improbable that here was an instance of successful instruction of a deaf mute in articulation by a process somewhat similar to that now practised.

The story having received the shape in which we find it from the superstitious credulity of the age; the exaggeration extending also to the degree of success (as regards time) as well as to the other more marvellous points of the story.

This solitary instance of teaching was doubtless looked upon when it occurred, and for centuries, as a kind of miracle, but it was no more such than any case at the present day.

Unfortunately, no further teaching is related until about 800 years later, when a native of Grönigen in Saxony is related to have taught a deaf and dumb youth to read and write. In 1576, an Italian physician, named Jerome Cardan, pointed out the feasibility of educating the deaf and dumb; he said: "Writing is associated with speech, and speech with thought; but written characters and ideas may be connected together

without the intervention of sounds, as for instance in hieroglyphic characters." Cardan, however, did not attempt to put his theories in practice, but they most probably influenced subsequent writers and teachers, who made practical use of the most important maxim that knowledge might be conveyed independently of spoken language. Upon this basis the sign language was constructed. The next teacher known to history was a Benedictine monk at Ona in Spain, named Pedro Ponce, who is related to have taught two brothers and a sister of the Governor of Aragon—they were deaf and dumb from birth. Ponce succeeded in making his pupils *speak*, write, and reason very well. He died in 1584, and forty years afterwards another Spanish monk named Jean Pablo Bonet taught successfully, and published a work on his art.

From this period many learned men busied themselves in the great work saving the deaf from their doom of silence and heathen darkness. Amongst others in particular may be mentioned a Jesuit of Brescia, Padre Lana-Tergi, who employed himself on the subject of giving language to the deaf, and teaching the blind to read and write. Towards the latter part of the seventeeth century we find a group of earnest workers in this field, viz., John Bulwer, an English physician, who published a work called "Philocophus: The Deafe and Dumbe Man's Friend." Dr. Wallis, an Oxford

professor, and Dr. William Holder, a clergyman of the Church of England, both of whom taught successfully, and published works; Dr. Holder's contribution being an essay upon the Elements of Speech. George Dalgarno, a Scotchman, who believed himself to be actually first in the field, wrote a treatise upon the art of instructing the deaf and dumb, entitled "Didas Calocophus; or the Deaf and Dumb Man's Tutor;" wherein he shows that a deaf man is as capable of understanding and expressing a language as a blind man, inasmuch as that all information is conveyed to the mind through the bodily organs. This writer, however, did not advocate teaching spoken language, though he admits the possibility.

In Holland we find a Swiss physician, named Amman, instructing a girl deaf from birth, and during the progress of her education he published a most valuable work in Latin, entitled "Surdus Loqueous," similar in many respects to Holder's work on the Mechanism of Speech. Also in Holland at this time, a tract was published by Van Helmont, a chemist, upon a method of instruction, and one by which he had succeeded in teaching a deaf person to read well on the lips, *i.e.*, to understand what is spoken by watching the organs of articulation. Van Helmont is also said to have perfected a speaking machine.

Quite a number of other persons might be

enumerated, did time allow, who were engaged at various times in designing or carrying out methods of instruction, some based upon the principles of spoken language, others on a system of signs—others again using both means to attain their ends, but I must hasten to bring to your notice two men who devoted their lives to the work, who not merely confined their teaching to one or at most two or three pupils, but who founded institutions and systematised their respective but unfortunately different methods of instruction. The one a French Abbé named de l'Epée, who commenced his work about the year 1755 in Paris.

His attention was attracted to the matter by being brought in contact with two young girls, who did not answer certain questions that he put to them. When he discovered their condition, he decided at once to undertake their education. "Believing," said the noble minded man, "that they would live and die in ignorance of true religion if I did not attempt some means of teaching them, I was moved with compassion for them, and requested their mother to send them daily to my house, that I might do whatever I found possible to do for them."

His school which he afterwards founded attracted general attention, and received the patronage of the Government. Other schools were modelled on it throughout France and other countries, and so

the system of signs elaborated by the most worthy Abbé was adopted in many lands, but to the great misfortune of the ever unfortunate deaf, for although we must admit their condition under the French method of instruction immeasurably relieved, they still remained silent—dumb, and cut off from the hearing and speaking community.

Let us now turn our attention to what was being done in Germany about this time. At Leipsic in 1778, one Samuel Heinicke, who for years previously had been privately engaged in the work, founded a school under the patronage of the Elector of Saxony, and established in Germany for good and all, a system whereby dumbness arising from deafness was practically abolished.

In Scotland too at this period Thomas Braidwood commenced teaching deaf children on the plan adopted by Dr. Wallis already mentioned, viz., by the spoken word. But unhappily the silent system, as being more widely known through the efforts of the energetic French Abbé, was ultimately adopted in the English schools as they were established throughout the Kingdom. And so likewise did this happen in Canada and our other large colonies, and the United States. Thus we have the sorry spectacle in the present day of the English speaking races denying their deaf the blessings of human speech, whilst nearly every continental country (France even now included)

have decreed that the deaf shall no longer be dumb.

Mr. President and Gentlemen, let me hope that when professional men and all classes are made alive to the fact that the dumbness of most deaf persons is produced, manufactured I may say, by ignorance, prejudice, carelessness, and irrational clinging to old forms—that they will use their fullest influence to effect the abolition of so gross a scandal to a rich and highly civilized country.

In saying that the dumbness of the deaf is manufactured in this country, I am saying something less than the mournful truth, for I was thinking at the moment only of the born deaf—but allow me to quote the following case, related by Dr. Cassel of Glasgow. He says, in a pamphlet entitled "On Teaching the Dumb to Speak," published in 1878: "Several years ago a fine healthy looking boy of about nine years of age was brought to me, having lost his hearing eight months before the date of his visit. Examination showed that he was totally and incurably deaf. In these circumstances it only remained for me to advise the parents of the boy as to the best mode of carrying out his education.

"As he could speak fairly well even yet, although less perfectly than at the outset of his malady, and withal being very intelligent and well advanced in his education, I advised the parents to

conduct his education at home, and in so doing to spare no pains to retain and to preserve his speech, a result quite attainable under such circumstances as this case presented.

"After a lapse of about three years, I saw this case again. Instead of the lively and fresh looking boy, with an intelligent expression on his face, as on the first visit, he now had that care-worn and expressionless visage so often seen among those who are deaf and dumb. In fact, the altered appearance of the boy was so great as to render it difficult for me to identify him with the comparatively cheerful looking lad whom I now recollected to have seen just three years previously; nor was this difficulty on my part lessened on discovering that the boy now before me was quite *dumb*.

"On making inquiries into the history of the case during the interval of time that had elapsed between his visits to me, I found that my instructions in regard to his education had not been followed by his parents, and that instead of educating him at home, as they were enjoined to do, they had sent him for that purpose to a public institution for the education of the deaf and dumb. The consequence of that false step I now saw in the person of the boy before me. The result of three years' educational training in the Asylum had been to convert the *deaf* boy into a *dumb* one."

Gentlemen, the above sad story could be, I regret to say, multiplied many, many times; and what appears one of the worst features of the case is, that the exponents and upholders of the Silent System apparently see no harm in their action, are blind to their wrong doing.

Have we yet quite freed ourselves from the reproachful condition of a bygone age? Do we, all of us, even in these days, quite understand the mental and physical status of the deaf and dumb? I fear the answer, sad as it is, must be, *No*, not at all, far from all, for were it otherwise, such a condition of things could not exist. The fact is, the outside world has so little knowledge of the deaf and dumb, so rarely comes in contact with them, so rarely sees them. The prevailing idea being that members of this unfortunate class are afflicted beyond hope of cure, and from the nature of their affliction, cut off entirely from the rest of the community. Let this terribly false impression be dispelled once and for all. Let it be known unmistakeably that dumbness as a consequence of deafness should not exist in the land.[1] Let it be stamped on the minds of men that even the deaf-born may establish complete kindred with their hearing fellow creatures by the common bond of human speech. Let all this be understood, and the knell will be sounded that shall signal the death of a system founded in error and maintained by prejudice.

Gentlemen, I fear to trouble you with figures, but in common justice to my subject, the welfare of the deaf, I must beg your attention for a few minutes to what is usually considered a very dry detail.

The numbering of the deaf and dumb first took place in the census of 1851, and showed 17,300 such unfortunates in a population of, 27,511,801, the proportion being 1 in 1,590. The next census showed 20,311 deaf and dumb in a population of 29,321,288, thus giving 1 in 1,432, a very noticeable increase in the affliction.

In the census of 1871, 19,237 are returned as deaf and dumb, whilst the population figures at 31,845,379, the proportion sinking to 1 in 1,644. The average proportion of the deaf and dumb to the hearing community throughout Europe, is estimated at 1 in 1,600.

But statistics connected with these poor creatures are only approximate, and generally believed to be greatly under the mark, as so many parents evince great dislike to returning their child as so afflicted.

It is feared that the recent census will show probably over 30,000 deaf and dumb for the United Kingdom. It is estimated that about 5,000* of these are of a fitting school age, and of this number about 2,200 are in existing institu-

* The number of deaf children of school age is reckoned at sixteen per cent. of the whole deaf population.

tions, being strictly trained to the use of their hands and arms, instead of to the use of their voices. Some hundred or more are being educated on the "German" or Pure Oral Method. And the remaining 2,700 are literally without any education whatever, growing up in silent wretchedness and heathen darkness, without knowledge of a past, without appreciation of a present, without hope of a future. And this, Gentlemen, is in England, at the present day, after all the centuries through which the Christian doctrine has been preached, practised, and instilled into the minds of men. In England this happens, a land rich in all that a great nation can possess or desire. You may naturally ask why is this so. My answer must be, because private charity and philanthropy, however far reaching they may be, fail to embrace all the suppliants of their mercy, in their generous care. Though more funds be willingly given, when the necessities of the case are known, more will be wanted, and yet more, and always more. England occupies the unenviable position of being one of the very few countries in which the Government take no heed of their deaf and dumb (and other afflicted classes may be also included). So long as private benevolence takes charge of them, or some of them, so long is the Government free of a troublesome duty, and an inconvenient demand on the National Exchequer. If

private benevolence happens to overlook or fail to provide for some few thousands, well no doubt that is unfortunate, but they will surely sooner or later receive the benefit of some other charity; a hospital, an asylum for imbeciles, a workhouse, and finally a pauper's grave. Doubtless this is not a pleasant way of putting things, but if the putting be not pleasant, is not the *doing* most terribly unjust?

Having brought an evil to your notice, the evil of allowing thousands of your fellow creatures to suffer grievously under an unnecessary affliction, it is only fitting that I should indicate some kind of remedy. This I at once proceed to do. In the first place, you require the general adoption of a system properly fitted to the requirements of the deaf. That system we have, viz., the "German," but by no means its general adoption. Next you require exponents of the method; but only very few are available in this country.

You must, therefore, have establishments for the scientific training of instructors, and it was to this end that the Training College for Teachers of the Deaf was instituted three years ago at Ealing, W. You will further need many more schools to accommodate the untaught deaf, and finally to accomplish all this, you require funds. These, I think, will be liberally forthcoming from private sources (until the State takes over their just duty),

when it is fully understood that a bitter wrong has been done, and is yet being done to the deaf in our own land.

When people's minds can be disabused of that false shibboleth of the Sign Method Teachers, that "signs are the natural language of the deaf." And when they can be brought to grasp in its full force and truth, that the language of the deaf is the language of the hearing—no other—speech, the universal language of God's image on earth. When this is understood, then shall be proclaimed far and near to the long suffering deaf the welcome news, "Demum fiat justitia." You shall no more be branded as the brutes of the earth. No longer shall you be the bondsmen of signs. Your fetters of silence shall be stricken off. You shall be free to speak your every thought in words to men; to see and understand in return, free to offer up words of grateful praise to the Almighty Creator for His mercy in directing that—

HIS WILL ON EARTH BE DONE.

Discussion.

The President remarked that though the subject of the paper they had just heard was not very closely connected with dental surgery, it was one of universal interest, since most of those present must be acquainted with some deaf people; he had no doubt therefore that it would give rise to a free discussion. He himself had been getting a little deaf of late, and he found that he had acquired the habit of watching the lips of those with whom he conversed, though it had not before occurred to him to think why he did so. He wished to ask Mr. Kinsey whether he found any difference in the facility of teaching those who were born deaf or those who had afterwards become so?

Mr. Stocken, said he had heard Professor Morley relate how, in the course of a conversation with a party of gentlemen one evening, he noticed that as it became dusk one of them became silent and ceased to reply to his questions, but resumed the conversation as soon as the lights were brought, and on inquiry he found that this gentleman was quite deaf, and was only able to understand what was said by watching the lips of those present.

Mr. Chas. Robbins said that when he was about ten years of age he resided for about two years and a-half in the same house with a deaf and dumb man, who was over thirty. This man took a great fancy to him, and as he (Mr. Robbins) learnt the finger signs, they were a good deal together. One day when he had been teasing the deaf man, the latter managed to get out the word "fool," and this gave Mr. Robbins the idea that if he could say one word he might be taught others. So he made the attempt, and with such suc-

cess that when he left, about two years after this occurrence, his deaf friend could say about 150 words.

Mr. F. Canton said that amongst his acquaintances was a deaf old lady who could understand all that was being said by watching the lips of those speaking.

He once had occasion to use the dental engine to an upper molar of a lady who was very deaf. When he had finished she asked him to show her what he had been using, adding that it made such an extraordinary noise in her head, "like a windmill going round."

Mr. Isidore Lyons said he had a brother, now aged 35, who became deaf at eight years of age and soon lost his speech. His parents then took him to a doctor who advised that he should not be taught any signs, but that he should be sent to an ordinary school and should mix as much as possible with other boys. The wisdom of this advice was shown by the fact that he was now able to converse with anybody and to transact business without difficulty. With reference to Mr. Kinsey's statement that dumbness was not a necessary consequence of deafness, he wished to point out that the converse was not true; he had met with dumb patients who could hear even a whisper.

Dr. Buxton said he had met with many cases in which lip-reading had been acquired late in life; *e.g.*, an old lady who had been accustomed to use the sign alphabet became paralysed by gout, and then learned to speak and understand speech when she was 70 years of age. She was thus enabled to give most important directions respecting the management of her affairs, when actually on her death bed. But these accomplishments were most easily acquired in early life. He had been much interested in Mr. Robbin's story; if that gentleman could do so much as mere boy teaching, for amusement and without any special knowledge, what could be done by those who had given their whole attention to the subject. Next to doctors he believed that no body of men had more frequent opportunities of giving advice in such matters as this than dentists, and if they would use their influence to

promote the use of the German system they would do a great service to their patients.

With regard to the audiphone, he did not think that Mr. Rhodes claimed that it would enable those who were completely deaf to hear, but only that where there was any perception of sound it might be increased by this means.

He might mention that the terms "French system," and "German system" had lately been almost discarded at the particular request of the French teachers. The French now called their old method the "silent" system, and were adopting the other under the name of the "oral," though their national susceptibilities would not have allowed them to do so had it still been called "*German*."

Mr. Woodhouse asked whether it was found in practice that wearing a moustache or beard interfered with the facility of lip-reading.

Mr. Ackers said that he himself suffered occasionally from deafness, and he found at those times he could not hear the ticking of a watch if placed between his artificial teeth, but could hear it distinctly if placed under his natural teeth. His artificial teeth fitted very well, and he should be glad if anyone could give some explanation of this marked difference in the conduction of sound.

Mr. Sewill said he was present when Mr. Rhodes exhibited his audiphone at a meeting of the Harveian Society, and he brought it forward simply as a good conductor of sound which was led up through the dense wood, teeth and bone to the auditory nerve. He never suggested that it would enable people to hear without an auditory nerve.

Mr. Arthur Underwood remarked that, with reference to the doubts which Mr. Kinsey had expressed respecting the capabilities of "their favourite fifth," it should be remembered that, according to Stricker, the final terminations of the fifth and seventh nerves were in very close proximity, and it was not, therefore, so difficult to believe that they might have some functional as well as anatomical relation-

ship, and that, under certain circumstances, the former might take on some of the duties of the latter.

Mr. Chas. Tomes said that without venturing to assert that the fifth nerve might actually take on the office of the seventh, this was theoretically more probable than the phenomenon which Mr. Kinsey had regarded as equally improbable, viz., the perception of light by the ophthalmic nerve. It was probably that the vibrations of light would only be recognized by a special nerve, on account of their small amplitude, whilst this special differentiation seemed to be less necessary for the purpose of recognising the much coarser vibrations of sound.

Mr. Kinsey then replied very briefly to the questions which had been put to him. In practice it was found that children who had been born deaf were easier to teach than those who had lost their hearing. Muteness might of course arise from other causes than deafness, for instance, from deficient brain power. The wearing of a moustache was found to offer little or no impediment to lip-reading; several of the foreign teachers of the German method, with whom he was acquainted, wore heavy moustaches and beards.

With regard to the apparent perception of sound through the audiphone by persons who were quite deaf, he believed that they did not perceive *sound* at all, but only the mechanical vibrations; thus, one patient on whom it was tried said he could not hear but "felt a tickling in his head." This was of course perceived by means of the nerves of common sensation, and not through the auditory nerve.

The President then announced that at the next meeting Mr. David Hepburn would read a paper on "Chronic Suppuration connected with the Teeth."

The meeting was then adjourned.

Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING.

June 13*th*, 1881.

THOS. A. ROGERS, Esq., President, in the Chair.

The minutes of the previous meeting having been read and confirmed, the President said,—

Gentlemen,

I am sorry to inform you that since our last meeting this Society has lost one of its earliest members, and many of us have lost an old and valued friend. Mr. Isaac Sheffield, after filling various other offices in this Society, was its President in 1873: he always took great interest in its progress, and I feel sure that it will be in accordance with the wishes of the members, that the Council should have decided to send a message of condolence to his family.

Secondly, I have to announce that at a meeting of the Committee of the Dental Section of the International Medical Congress, which was held at Mr. Saunders' house this afternoon, the proposal of the Council of this Society to hold a conversazione on the evening of Tuesday, August 2nd, the first day of the Congress, was unanimously approved of.

Messrs. H. P. Ferwald, F. H. Weiss, and W. G. Weiss, signed the Obligation Book, and were formally admitted to membership by the President.

The President announced that Mr. A. Halliday Best, of 14, Henrietta Street, Cavendish Square, had been duly nominated, and would be balloted for at a subsequent meeting.

Mr. Ernest E. Jewers, L.D.S., Eng., of Plymouth, was balloted for and unanimously elected a member of the Society.

Mr. S. J. Hutchinson announced that Mr. Lloyd, of Agra, had presented to the Museum some specimens of the teeth of an Indian fish, called the "Rahoo," and also the canine of a tiger which had been sawn off, and worn as an amulet by a native. Mr. Edwin Canton had sent a very fine specimen of the teeth of the fossil Iguanodon.

Mr. Chas. Tomes said that this tooth was a remarkably good specimen; it showed well the serrated enamel ridges. It was accompanied by another specimen which had been well worn, and which showed how the presence of the enamel on one side only of the tooth and forming the cutting edge, kept the tooth sharp for a long time, until it was almost worn away.

A portion of mammoth tusk had also been sent by Mr. Box; it was much weather-worn and of little value as ivory. It was a popular belief that mammoth ivory was an important article of commerce, but this was not true. Tusks were occasionally found in good preservation,—thus one was offered to the Oxford Museum a few years ago, which was worth £60 as ivory alone—but more often they were much broken up and discoloured by exposure to the weather, the action of floods, &c. In 1873 and 1874 some large importations of mammoth ivory were brought to this country, but only part of this large quantity was sold, and those who bought it did not find it good. Every now and then some of the remainder was brought forward for sale by auction, and bought in, giving rise to the idea that there was a regular supply of the material.

Mr. Hilditch Harding showed an upper central incisor which had been extracted from the mouth of a boy who had applied at St. Thomas's Hospital suffering from abscess about the fang of this tooth; half the crown had been broken off some time previously. On extracting the tooth a fragment of wood was found projecting about a quarter of an inch

beyond the apical foramen; this had, of course, been the cause of the abscess. On being questioned, he said that he had been in the habit of chewing wood for amusement in school hours, but he had no idea when, or how, the splinter got into the tooth. A somewhat similar case had been narrated by Mr. Ranger, ten years ago. In his case the impacted articles were a piece of slate pencil and a pin.

Mr. Harding also exhibited part of an elephant's tooth, to which the following history was attached. An Indian officer, finding that one of his elephants was suffering great pain from toothache, thought that he might relieve the animal by sawing off the crown of the tooth. This was accordingly done, but the portion removed showed no signs of caries, and the elephant was not relieved by the operation. The tooth was brought to England, and had been used as a paper-weight.

The same gentleman also handed round a model of the upper jaw of a sailor, aged 24, who applied at St. Thomas's, on account of a large perforation of the palate. He stated that when he was 12 years old, the bones of the nose came away together with a considerable portion of the hard palate; after this a sound and healthy canine tooth made its appearance at the margin of the aperture. There was an offensive discharge, and his speech was almost unintelligible. There was no history of syphilis. He was, however, placed under treatment by iodide of potassium and mercury, and a model of his mouth was taken for the purpose of making him an artificial palate; but as he was called away to his ship, which was bound for the Cape, further treatment had to be postponed until his return.

Mr. Coleman said he had a case to bring forward which illustrated the difficulties which might occasionally arise in the performance of what promised beforehand to be a very simple operation.

A patient came to him complaining of pain in an upper wisdom tooth; it was carious, and he accordingly proceeded to stop it. This gave relief for the time, but the tooth again

became uncomfortable, and appeared to be a little loose. Mr. Coleman then extracted it; it came out very easily, but on looking at it, it appeared as if one of the fangs had been left behind, and on feeling in the alveolus a hard substance was met with, which he took to be the missing fang. But on trying to extract it, it was found to be smooth and quite unlike a broken root. On further examination this hard substance proved to be a second wisdom tooth, which was coming down above the first, and the pressure of which had caused absorption of the root of the extracted tooth.

Mr. Coleman also showed a model of an interesting case which had come under his care at St. Bartholomew's Hospital. The patient had a growth of a very hard unyielding nature on both sides of the lower jaw; it had been four years in forming. It had deflected the lower teeth inwards, so that the upper teeth bit on the external surfaces of the lower. Mr. Lyons removed the stump of the second right molar, and Mr. Coleman examined under the microscope some fragments which were adherent to the roots, but what he found was simply hypertrophy of the alveolar dental membrane. On the right side there was an opening apparently communicating with the growth, and here pulsation was observable, but no fluid could be pressed out of it. The model showed the dimensions of the growth, and also the deflection of the teeth.

The President said he hoped Mr. Coleman would at a future meeting give some account of the further progress of the case.

The Cavaliere Atkinson, of Naples, showed several models taken from patients who had been operated on for tumours of the jaws, together with the plates, &c., by means of which he had filled up the gaps made by the operations.

The first was a model of the upper jaw of a woman, aged about 50, who had been operated on for an osteo-sarcoma, almost the whole of the right half of the bone having been removed. The deficiency had been supplied by a carefully fitted vulcanite plate. The operation was performed two

years ago, and the patient had never returned, so it might be presumed to have been successful.

Another showed the face of a patient who had been twice operated on for a recurrent tumour, resulting in the loss of the nose and part of the cheek. This had been supplied by means of a piece of semi-vulcanized rubber, carefully moulded and painted, the result being that the disfigurement was not distinguishable at a distance of a few feet.

Mr. Atkinson next showed some gold palate plates with vela attached, fitted with ingeniously arranged springs, which he had made for aggravated cases of congenital malformation and syphilitic disease of the palate. Lastly, he showed models of two cases in which portions of the *lower* jaw had been removed, and explained that these were much more difficult to treat on account of the slight support afforded by the remaining fragment of the bone, and the great tendency there was for this to be drawn backwards and inwards by muscular action. The great point in such cases was to begin the treatment as soon as possible after the operation by inserting a gutta-percha piece, without teeth, to force back the remaining portion of jaw into position. Then, having got the fragment again to articulate properly with the upper teeth, a model could be taken and a vulcanite piece fitted to supply the place of the part which had been removed.

Mr. F. Canton remarked that the models which had just been handed round were so interesting and instructive, that he hoped Mr. Atkinson would allow duplicates of them to be made for the Museum. He was much pleased with the arrangement of Mr. Atkinson's gold vela; he had tried them made in hard rubber, and with fair success.

Mr. Hunt said he had used Dr. Kingsley's plan of soft rubber vela for ten years past, and was quite satisfied with the results. When the velum was placed below the palate, as in Mr. Atkinson's plan, there was always a tendency for it to be forced down by muscular action; but in Dr. Kingsley's plan the velum was placed above and behind the cleft, and was held in place by muscular contraction. He believed also

that the plan of placing the velum behind the soft palate gave greater clearness of speech.

Mr. Atkinson said he should be very pleased to send copies of the models with a history of the cases attached, to be added to the Museum.

Mr. Cheney, of Manchester, showed a vulcanite plate the palate of which had been covered with gold foil and then vulcanized. Patients often complained that the vulcanite palate was hot; gold being a better conductor of heat, was more comfortable, and a plate thus covered was very easily finished. He also showed an apparatus for approximating the central incisors; a very neat and ingenious mode of attaching porcelain crowns to natural roots by means of either white stopping or amalgam, which he had used for some time with good results; and also an upper denture of celluloid, showing the thickness the piece should be made to prevent its warping and splitting round the teeth. He believed that one cause of failure when celluloid was used was due to the practice of making the piece as thin as vulcanite, and not leaving sufficient substance round the necks of the teeth.

The President then called upon Mr. David Hepburn to read his paper on "Chronic Suppuration connected with the Teeth."

On Chronic Suppuration Connected with the Teeth.

Mr. President and Gentlemen,

Suppuration in connection with teeth is a morbid condition which comes so frequently under the notice of practitioners of our speciality, that in laying before you a few details relative to the subject, I feel constrained, lest you should imagine that I am going to be wearisome, to preface my remarks by stating that my paper is not a very lengthy one, and is based chiefly upon the reports of a few cases which I have lately had under treatment, and which illustrate certain features of importance.

Where a discharge has become chronic and emanates from a tooth, or teeth, or from diseased conditions of bone, which these organs may have occasioned, the tedious nature of treatment, with its too frequently unsatisfactory results, is well known. I do not refer to ordinary cases of chronic alveolar abscess where a fistulous opening exists on the surface of the mucous membrane communicating by a short canal with the root of the affected tooth, but to those more complicated ones in which we find a continuous or intermittent dis-

charge, which has penetrated to a part remote from the original situation of the mischief, involving in its course the destruction of a large amount of tissue. Or, again, where it may remain buried in a cavity formed by absorption in the substance of the maxillary bone, or where it may have burrowed deeply into the soft parts, to remain, perhaps for weeks, until resolution or evacuation takes place. This latter condition, often involving serious consequences, takes place principally in connection with impacted lower wisdom teeth, and the caseous nature of the discharge which may be obtained from such cases is very characteristic of pus which has been pent up for a length of time, the appearance being due to the absorption of the liquid portions and partial atrophy of some of the cellular elements. I have recently treated a case of this kind in which swelling had existed for many weeks, and an incision was eventually made in the sulcus as far forward as the canine tooth. This, however, proved to open merely an offshoot of the abscess sac, the main body of the pus being lodged in the tissues behind the ramus of the jaw, and extending down the neck. After softening the parts by poulticing, it was necessary to create an opening in this situation also, and I think in many cases there comes a time when poulticing externally is absolutely necessary. It is often impossible to create a free escape for the matter

from within, and consequently where absorbents have failed, and the swelling tends to become more diffuse, the sooner it is brought to the surface the better. Frequently, in the case of impacted wisdom teeth, a discharge is found in the mouth which might lead us to suppose that there was a free opening, but this, I think, is often only the pus which is formed from the inflamed and overhanging mucous membrane, and has no connection with the main abscess. That great destruction of tissue, where pus exists, both in connection with bone and the soft parts, should take place is not surprising when we consider the distinct power possessed by pus cells of absorbing tissue. The precise origin of these pus cells is a little uncertain, although it seems probable that the principal source from whence they are derived is the blood; indeed they are indistinguishable from the white corpuscles which are known to migrate freely in inflammatory conditions of the vessels. A certain number may be furnished by the tissues, and as they possess the power of multiplication, when once set going they rapidly accumulate, and when a discharge is fairly established, it is astonishing how long it will continue, if the exciting cause be not removed, or it remain unchecked by treatment. This is well exemplified in the case of a lady who came under my notice not long ago. She had suffered for sixteen years from

a formation of matter in the cavity of the antrum, which discharged periodically through an almost invisible opening in a perfectly healthy-looking and edentulous gum. The trouble originally commenced by the growth of an abscess at the root of a tooth. During all this period, no treatment has been employed. I have not had an opportunity of making a very careful examination of this case, but I was able to see that the discharge was not of a very purulent character. More frequently in such circumstances it is very fœtid, leading one to suspect the presence of dead bone, and treatment is absolutely necessary. Indeed, even in the absence of necrosed bone matter collected in a tortuous canal, or cavity in the substance of the maxilla communicating with the mouth, is under the most favourable conditions for becoming putrid, and our strongest antiseptic remedies should be applied. Even if we are unable entirely to check the discharge, we have rendered our patient a great service by disinfecting it. Antiseptic treatment in the mouth in these cases must necessarily be imperfect from the utter impossibility of excluding external influences, but it is within our power materially to alter the character of the discharge, and, in favourable cases, entirely to prevent its formation.

According to recent experiments bacteria are not present in wounds treated antiseptically,

although various forms of organisms may exist. These micrococci, however, appear to be generally inert, and do not tend, as a rule, to give rise to putrefaction. Moreover, leucocytes are generally absent, or when they do exist are evidently undergoing degeneration, and there is also a large quantity of granular matter, probably derived from degenerated pus cells. Such is the result when carbolic acid has been used, and all the minute details carefully and rigidly carried out. This, of course, is typical of a case where a wound has been made, and treatment from the moment of incision has been completely antiseptic. Once allow, however, the healthy pus to come in contact with the external air, without the use of carbolic spray, and everything is altered, bacteria are found, and putrescence results.

If, after the extraction of teeth which have been the original cause of sinus or cavities in the bones of the jaws, there appears to be little sign of improvement, I think in such cases we are very generally justified in concluding that there exists some small detached portion of bone which keeps up irritation, and is retarding the case. The most careful search with the probe will not always reveal its presence, and it may remain for months, and I believe for years, without being absorbed away, surrounded by fibrinous deposits, and locked in by the hard external plates of the maxillary

bones. It is only after protracted treatment, when our applications have washed away, so to speak, many of the superfluous products of inflammation, that we are enabled to discover the irritating fragment. When this is got rid of, cure rapidly takes place. I do not mean to imply that such a cause may always exist, for it is quite possible for an organised membrane to become a secreting surface for pus, indeed this condition is more or less always associated with alveolar abscess, but I think such a condition pure and simple is rare.

The following case illustrates the power of an irritating body to keep up an unhealthy flow of matter. The patient, a girl aged 22, came under treatment on February the 6th. There was a small sinus situated on the external surface of the alveolus over the right upper second bicuspid. This tooth, although perfectly free from decay, and normal as to colour, protruded into the cheek, and was slightly loose. The neck of the tooth was exposed, and the position strikingly abnormal. The sinus had discharged copiously and incessantly for a year, and slight pressure with the finger brought away about two drachms of purulent matter. The bicuspid tooth was removed, and the fang was found to be half absorbed away.

On February the 13th it was found that the discharge continued as profusely as ever. The empty socket was probed, but nothing could be

discovered. Passing the probe into the sinus, it entered a large cavity, and after considerable difficulty a hard substance was discovered. A free incision was made through the mucous membrane and softened external plate, and, after many attempts, some fragments of the crown of a tooth were removed, which when put together partook of the characters of a supernumerary tooth. The fang had been quite removed by caries. A small portion of dead bone was then brought away.

By February the 20th the discharge had considerably diminished, and when the patient was seen on March the 6th, it had quite ceased, and the parts around were healthy. In this case it was rather difficult to decide whether the bicuspid tooth, which was bitten upon obliquely by the lower opposing tooth, or the encysted supernumerary, was the original source of irritation, but I am inclined to think that inflammation of the periodontal membrane of the bicuspid, consequent upon its oblique position, spread to what might otherwise have been a quiescent impacted tooth. A cyst was then formed, and a sinus established, and this was followed by the almost total destruction by decay of the supernumerary tooth. Considering the absence of the root, I should think that it had never been entirely formed, but that when the sinus was established was somewhat in the condition of this bicuspid tooth (*specimen*

passed round) which I removed last week from the mouth of a little boy, aged 10 years. By the retention of the temporary molar, the bicuspid grew outside the arch, and the incessant hammering of the lower teeth occasioned abscess with diffuse swelling of the cheek. It will be observed that the root is only partially developed, and, when extracted, the cup-shaped cavity was full of most offensive decomposed pulp. That an impacted tooth may become subject to hurtful external influences from no fault of its own is exemplified by the accompanying beautiful specimen which I accidently procured in the dissecting-room. Here the canine is lying horizontally in the substance of the maxillary bone, separated from the floor of the nose by a very thin plate of bone. The crown of the lateral tooth has been removed by caries, and around its root there is a cavity which at some time during life must have been filled with pus. No injury seems to have resulted to the impacted canine, as it appears to be an exceptionally strong one, but it is quite rational to imagine how such conditions might have induced decay had growth been incomplete or the enamel faulty.

In the case just quoted, cure rapidly followed the removal of the irritating causes, the treatment from first to last extending only over one month, and the patient paying only four visits. But the

discovery of the exciting cause is not always so easy, as the following case illustrates :—

On November the 10th, a young man, aged 22, first applied for treatment. He stated that for six months he had suffered from a discharge of pus from a fistulous opening situated over the right upper lateral incisor. The teeth in the neighbourhood were perfectly healthy. The alveolar ridge was unusually deep, and on the affected side the teeth dropped somewhat. This he said had always been the case. The fistulous opening was so small that a silver probe could not be passed without exercising great pressure, and went through a narrow bony canal into a cavity running in for more than an inch. The cavity appeared to extend in all directions, the walls were soft, and no bare bone could be felt. The character of the discharge was serous and profuse in quantity. Having thoroughly syringed the cavity with a weak solution of carbolic acid, three days were allowed to elapse, when it was found necessary to enlarge the opening. The syringing was repeated frequently, until at the end of three weeks the discharge had apparently ceased, and the cavity seemed decreasing.

On December the 13th, a month having elapsed since the first visit, the opening had closed to a certain extent, and on probing it a small quantity of serous looking pus exuded. The canal was again freely enlarged, and at the expiration of a

fortnight, when the probe was again passed, a loose splinter of bone could be detected. The case was treated at intervals for another month, when the right lateral tooth became slightly loose. Although perfect as to colour, and free from all signs of decay, the pulp chamber was drilled into through the lingual wall, and the nerve was discovered, as suspected, dead. By forcing up a large quantity of water, it could be made to exude through the opening in the alveolus, but although treatment was continued for two months, the discharge, when injection was suspended, returned as freely as at first. I then determined to remove the tooth, which resulted in a speedy cure. Altogether this case was under treatment for over five months, and the agents employed were carbolic acid, permanganate of potash, and iodine, which latter I think very useful when the discharge is of a serous nature. The lateral tooth was of peculiar importance, or I would have immediately removed it, on its revealing itself as the exciting cause of mischief, and I do not think we can hope to bring about a permanent cure, where absorption of bone has taken place to so large an extent, so long as the offending member remains. A few weeks ago a tooth was removed in the operating room of the Dental Hospital, through the apical foramen of which a cotton wool dressing protruded for more than three-quarters of an inch. Here the cavity

in the bone was unsuspected, as there was no external opening, except through the root canal. This unique dressing, however, teaches a valuable lesson.

The third and last case in detail which I will mention this evening is one which illustrates the advantage of treatment, even when the formation of the discharge is not entirely checked by it. It is also remarkable as showing the large amount of putrid pus daily secreted, and lends a testimony to the marvellous powers of eucalyptus oil, which, as an antiseptic agent of peculiar power, was first brought before my notice by my friend Mr. Arthur Underwood. An abbreviated description of the case taken from my note book is as follows :—

The patient, a young man of delicate constitution and nervous temperament, complained of an incessant discharge being in the mouth, in such quantity that he never could forget its presence, and was constantly obliged to get rid of it by letting it pour on a handkerchief, many of which were soiled during the course of a day. He was conscious of a most offensive odour arising from this state of affairs, and it was a source of great trouble to him.

On August the 23rd, on examining the mouth, the incisor teeth appeared of unusually large dimensions, and showed signs of fracture on their

cutting edges. The right lateral incisor had been extracted. In the mouth there existed a puffy swelling, well defined, but of small size. This was situated as far back as the first molar tooth, and close to the vault of a peculiarly lofty palate. No fistulous opening could be seen, but on applying pressure to the palatal tumour, an enormous quantity of fœtid pus poured from a minute canal in a situation corresponding to the socket of the extracted lateral. The matter literally flowed from the mouth, and this operation the patient was in the habit of performing many times a day. He stated that the lateral tooth had been extracted seven months ago, but that ever since that time the secretion of matter had continued unabated.

A silver probe was passed into the minute canal, and after the first resistance, which was merely at the aperture, it ran in freely for an inch and a-half, when its progress was arrested by some fibrous structure. A free incision was made into the palatal swelling, and then into the socket of the extracted lateral, a syringe charged with water was passed. The water, however, could not be forced out of the opening in the palate. A bent silver probe was then used as before, until it could be pushed no further, and a fine instrument was passed into the palatal opening. This went in for nearly an inch, and having been boldly forced

through a resisting fibrous mass, the points met. Water could then be freely syringed right through the canal. Having enlarged the small fistulous opening, and having thoroughly syringed this tortuous passage, a long strip of lint saturated in eucalyptus oil was packed up until it came to the point where the canal seemed to turn off at right angles. Using a bent crochet hook through the palatal aperture, with great difficulty the lint was distinguished from the surrounding fibrous structures, and its end was drawn out at this opening. Two days afterwards, when the lint was withdrawn, it was found thickly coated with creamy secretion, but still smelt strongly of eucalyptus. No discharge had appeared in the mouth during the interval, and very little could be forced by pressure. The patient expressed himself as not having felt so comfortable for months. After a few dressings the discharge entirely ceased, but returned when treatment was suspended. My patient being peculiarly nimble fingered, and finding great relief from what had been done, mastered the knack of accomplishing the dressing himself, although of course he could never bring the lint out at the palate, and, to make a long story short, he conscientiously applied his antiseptic treatment twice a day for nearly eight months, visiting me from time to time. I found that the eucalyptus rendered everything pure, as nothing else could

do, but whenever this was discontinued, there was a return of the discharge.

On March the 9th the condition of the parts were as follows :—The canal certainly lessened in calibre, the mucous membrane in the palate evidently adhering, although the opening was still patent, and the right central had become painful.

Considering the fact that both centrals were dead, unsightly, and as I now for the first time believed, keeping up irritation, I removed them both. The roots were long, and to my satisfaction I found that a probe passed into the right socket entered a distinct canal which communicated, although at some distance, with the original one. This was treated with eucalyptus in the same manner, and after a week a loose piece of dead bone could be distinctly felt. From that time a marked improvement took place. The patient is still under treatment, and I am hopeful when the small piece of bone comes away that a radical cure will soon be effected.

From my experience in this aggravated case I cannot too highly vaunt the praises of eucalyptus oil. The lint when withdrawn, after the first few dressings, was thoroughly free from stain, save that it was thickly coated with the creamy, but completely disinfected secretion.

My apology, Mr. President, for bringing these notes before the notice of the Society this evening

must be my desire to gain information on a class of case which is ever a source of anxiety to the practitioner, and of distress to the sufferer, and if gentlemen here present will give their experiences on the subject of this paper, especially with regard to pathological conditions, methods of treatment, and length of time over which it may have extended, the gleanings from these experiences I am sure will be of much service in throwing light upon one of our professional difficulties.

Discussion.

The President congratulated Mr. Hepburn on the interesting and instructive subject which he had chosen for his paper. The treatment of cases of suppuration connected with the teeth had hitherto been generally troublesome and unsatisfactory, but he thought that they were now getting on the right track, and might soon hope to be able to deal with them more promptly and successfully.

Mr. Arthur Underwood said he was very pleased to hear that Mr. Hepburn had formed so high an opinion of the value of eucalyptus oil, though this only coincided with his own experience. It was certainly a very powerful antiseptic, more permanent in its effects than carbolic acid, and whilst possessing valuable stimulating properties, it did not act as an escharotic as carbolic acid did when used in a concentrated form. It would generally be found that the duration of the treatment of these cases could be greatly shortened by the use of this oil, but it was only thoroughly effectual when applied to a smooth surface; a piece of dead bone served as a secure haven for bacteria, into the recesses of which the eucalyptus oil could not penetrate. Mr. Hepburn had said that the antiseptic treatment of suppurating cavities connected with the mouth must necessarily be imperfect, but he (Mr. Underwood) believed that this was the case only when dead bone was present; under other circumstances, if sufficient pains were taken, the discharge could be kept perfectly sweet and free from all traces of decomposition.

Mr. Hunt (Yeovil) thought that too much was made of the presence of bacteria. It might be true that eucalyptus oil was fatal to bacteria, but it did not follow that all its good effects were due to this. Bacteria were found everywhere, even in health; we all swarm with them, and no one thought any-

thing about them. There was no doubt that, in the majority of cases, these chronic sinuses were dependent on the presence of dead bone, but they were also lined with mucous membrane which was in a morbid condition, giving off a vitiated secretion; the source of irritation should be removed, and the diseased lining membrane scraped off, the sinus would then heal without further trouble.

Mr. F. H. Weiss remarked that in cases of simple chronic alveolar abscess, the discharge was generally serous; it might be either scanty or abundant, but it was not offensive. If the discharge was offensive, the existence of dead bone might be strongly suspected.

Mr. Gaddes related the following case which had occurred in his practice at the National Dental Hospital. A child was brought suffering from alveolar abscess on both sides of the mouth, connected apparently with the second temporary molars. These were removed, but the discharge continued. On further examination, the first permanent molars, which were carious, were found to be connected with the abscess. Carbolic acid was injected through the sinuses, and as this had no effect, Tinct. Iodi. was used in the same way. This cured one side, and the discharge from the other was greatly diminished. Mr. Gaddes then ordered the patient some sulphide of calcium pills; three days afterwards she came back with the sinus which had been thought to be cured, reopened and discharging as freely as ever; it had remained closed for three weeks. The sinus on the other side was also suppurating more profusely. He then extracted the second permanent molars, and the abscesses healed. He could not say whether the relapse in this case was actually due to the sulphide of calcium, but it appeared to be so.

Mr. Hepburn, having been called upon by the President for his reply, said that without wishing to underrate the value of carbolic acid for surgical purposes, there was no doubt that in these cases eucalyptus oil was much more effectual. Thus in the last case mentioned, that of the young

man, lint saturated with carbolic oil became fœtid in a few hours, whilst that with the eucalyptus oil, after being left undisturbed on one occasion for three days, was still unchanged. The smell also was much more agreeable to the patient.

With regard to Mr. Hunt's remarks about bacteria, he could only refer him to the experiments of Koch, published by the New Sydenham Society, or to those more recently carried out by Mr. Cheyne, one of Professor Lister's assistants. These observers find that bacteria are invariably present in *putrescent* pus, and that their presence may be taken as a certain indication of the commencement of decomposition; whatever will retard or prevent decomposition in such discharges will also retard or prevent the growth of bacteria.

He had in his paper laid some stress upon the fact that in the majority of these cases the sinuses were kept open by the existence of dead bone, and had pointed out that this was in some cases very difficult to discover, either from its small extent or its inaccessible position, and that a very small amount of necrosis would keep a sinus open for many months.

He quite agreed with Mr. Gaddes as to the value of tincture of iodine as an injection; in cases of simple chronic sinuses it was invaluable.

The PRESIDENT then proposed a vote of thanks to Mr. Hepburn for his paper, and to Messrs. Harding, Coleman, Atkinson, and Cheney for their communications.

This having been carried by acclamation, the meeting was adjourned.

INDEX.

T.

INDEX TO PLATES.

HARRISON AND SONS, PRINTERS IN ORDINARY TO HER MAJESTY, ST. MARTIN'S LANE.